

The logo for Toon Boom Studio 4. It features the words "TOON BOOM" in a bold, black, sans-serif font, positioned to the left of a stylized, jagged orange and yellow explosion shape. To the right of the explosion is the word "STUDIO" in a large, orange, outlined, sans-serif font. A large, solid orange number "4" is positioned to the right of "STUDIO". Below the main text, the phrase "ALL-IN-ONE ANIMATION SOFTWARE" is written in a smaller, orange, sans-serif font.

**TOON BOOM** STUDIO 4  
ALL-IN-ONE ANIMATION SOFTWARE

Tutorials

# Legal Notices

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## Publication Date

September 2007

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# Tutorials

The lessons in this tutorial give you the chance to learn Toon Boom Studio using realistic examples.

These self-contained lessons can be completed in any order, this allows you to learn about the features that interest you most.

The material for each lesson is included in the Tutorials folder of the Toon Boom Studio application folder on your computer.

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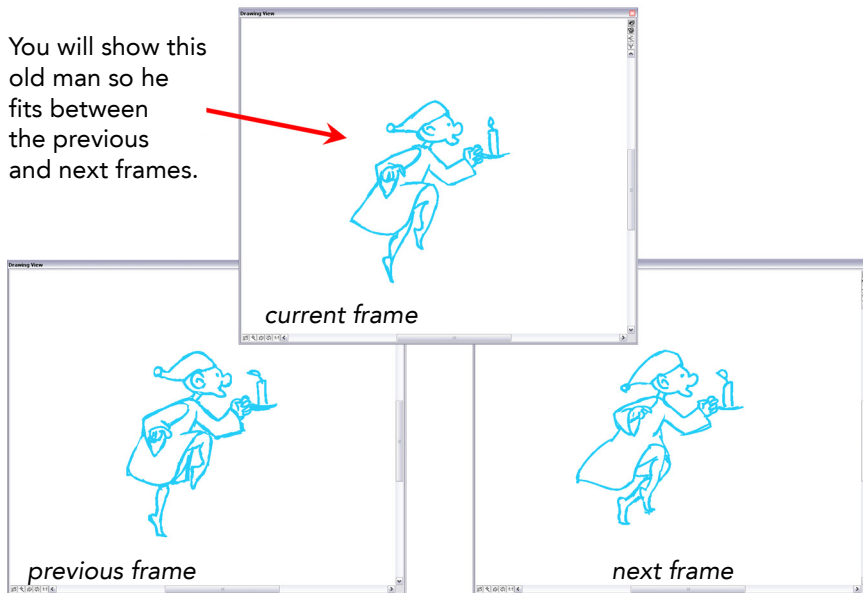
# Lesson 1: Drawing

In this lesson, you will work with Toon Boom Studio drawing tools to create frame-by-frame animation.

There are two animation projects for this lesson:

- Drawing\_Rough
- Drawing\_Final

You'll use the Drawing\_Rough animation project to complete a walk cycle. You'll use the onion skin, rotary light table, and the Toon Boom Studio centreline drawing tools and pressure-sensitive Brush tool to draw the old man.



**To start the Drawing lesson:**

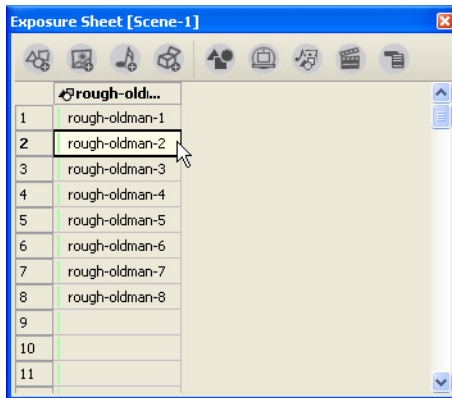
1. Download the Quick Start Tutorial files from the Toon Boom Animation website. You can click the Quick Start Tutorial link on the Welcome Screen to open the appropriate Web page.
2. Open the **Drawing\_Rough** animation project in the **Lesson1\_Drawing** folder.
3. Save the animation in a location of your choice using **File > Save As**. Saving this animation project to a new location will ensure that you always have the original to return to and use should you want to.

## Step 1: Drawing the Old Man's Head

In this step, you will draw the head of the old man using the Ellipse tool. Because this drawing must fit with the other drawings in the element to create a complete cycle, you will use the onion skin to show previous and next drawings of an element as a reference while you draw.



### To draw the old man's head:

1. In the **Exposure Sheet** window, click the first cell in the **rough-oldman** element and press the down arrow key on your keyboard. As you cycle through all of the drawings in the **rough-oldman** element, you'll notice that there is no drawing in the **rough-oldman-2** cell. That's because you are going to draw it!
2. Click the **Drawing View** window and set it up so that you have a clear view of the old man.
  - ▶ To turn on and off the grid, press [G], the default keyboard shortcut.
  - ▶ To zoom in, press [X], and to zoom out press [Z].
  - ▶ To pan the **Drawing View** window, press and hold [Spacebar] and use the Grabber tool to change the part of the window you are seeing.
3. Select the **rough-oldman-2** cell.




4. In the toolbar, click the **Onion Skin** button to turn on the onion skin feature. When the onion skin is active, the button looks like it is pressed in.



5. Click the **Show Previous**  button and select **Previous Drawing** and click the **Show Next**  button and select **Next Drawing**.

In the **Drawing View** window, the previous and next drawings in the onion skin appear in a different colour to distinguish them from the drawing you are working on.



6. Select the **Ellipse**  tool from the **Drawing Tools** toolbar.

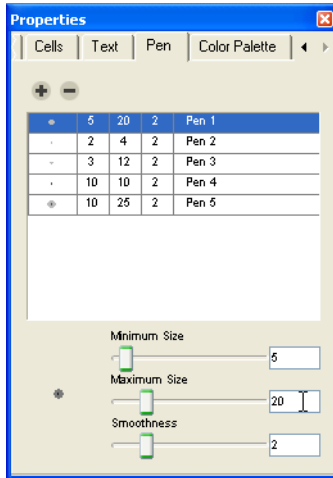


7. If the **Properties** window is not open, select **Window > Properties**. The **Properties** window appears.

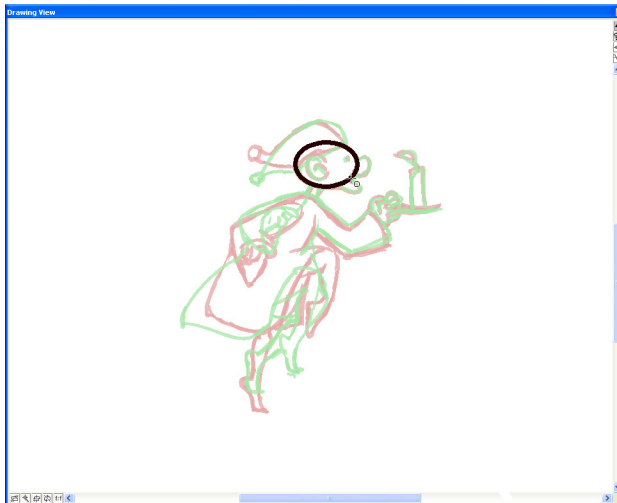


8. In the **Pen** tab, type 20 for the **Maximum Size** value.

When you draw with the centreline tools (including the Pencil, Rectangle, Ellipse, Polyline and Line) Toon Boom Studio uses the **Maximum Size** value for the width of the line.



9. In the **Drawing View** window, draw an ellipse roughly the shape of the old man's head. Don't worry about the actual shape not being the same as the one in the animation. You will reshape it using the **Contour Editor** tool.



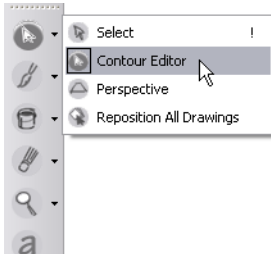
10. Save your animation using the **File > Save** command.

## Step 2: Reshaping the Old Man's Head

In this step, you will use the Contour Editor tool to move the points that make up the ellipse you drew in step 1 and reshape the old man's head.

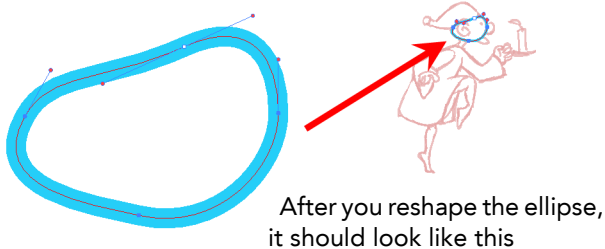
**To reshape the old man's head:**

1. From the **Drawing Tools** toolbar, select the **Contour Editor**.



2. Click the ellipse you drew in step 1. You'll notice that a line appears down the center of the shape (a centreline) and that there are points on this line.
3. Use the **Contour Editor** to reshape the ellipse by moving the points and dragging the Bezier handles. (To get the Bezier handles to appear, click a point on the centreline.)


The final shape should be approximately the same shape as the old man's head shown in the previous drawing.



After you reshape the ellipse,  
it should look like this

4. Save your work using the save command. Select **File > Save**.

## Step 3: Using the Brush Tool to Draw the Old Man

In this step, you use the Brush  tool to draw the head and then the rest of the old man.

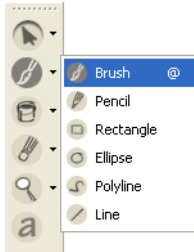
Unlike the Ellipse tool and other centreline tools (Rectangle, Polyline, Line and Pencil), the Brush tool creates variable-width strokes that respond to the pressure you apply with a digital pen and graphic tablet.

When you draw with the Brush tool, Toon Boom Studio creates shapes that are formed by points that surround a zone, which is filled with colour. We call the shapes created by the Brush tool “contour shapes”.

Drawing with the Brush tool allows you to create distinctive lines that are more natural than the mechanical looking centreline shapes. However, brush strokes require more memory to store because they use more points to create. If you are concerned about the file size of your animation, consider this carefully when choosing your drawing tools.

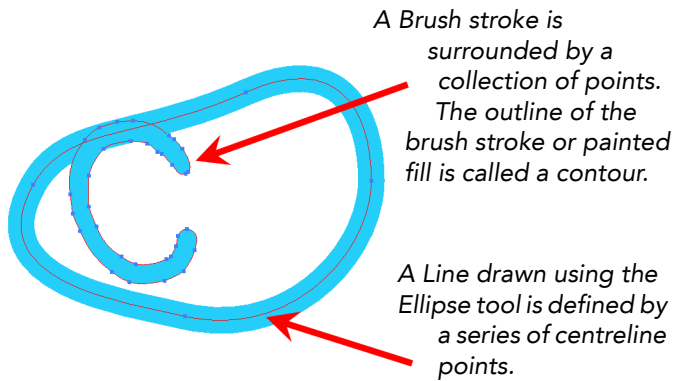
### To draw the old man with the Brush tool:

1. Select the **Brush** tool from the **Drawing Tools** toolbar.

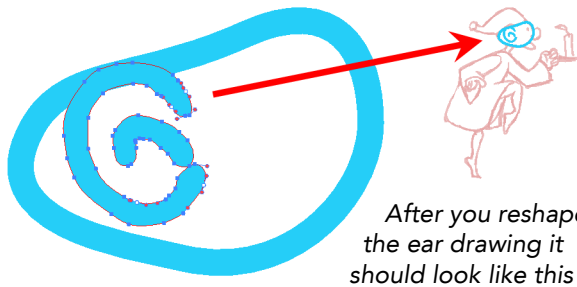


2. In the **Pen** tab, type 5 for the Minimum Size value. When you draw with a graphic tablet and pen, Toon Boom Studio uses the **Minimum Size** and **Maximum Size** values to determine the width of the variable-width line.
3. In the **Drawing View** window, use the **Brush** tool to draw a circle approximately the same shape as the old man’s ear as shown in the previous drawing in the onion skin.
4. Using the **Contour Editor** tool, [Shift]-click the old man’s ear drawing and the old man’s head. Notice the number of points in old man’s ear, drawn using the Brush tool, and the old man’s head, drawn using the Ellipse tool.

When you have finished comparing the drawings deselect them by clicking anywhere in the Drawing View window.

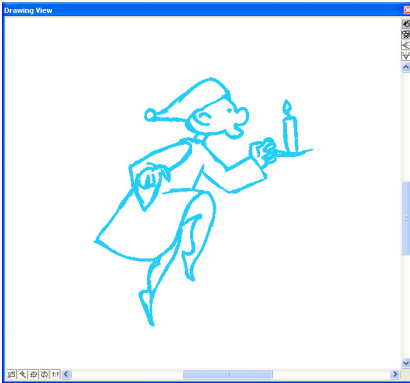


5. Using the **Contour Editor** tool and the curve handles, reshape the old man's ear you drew so that it is approximately the same shape as the old man's ear shown in the previous drawing in the onion skin.



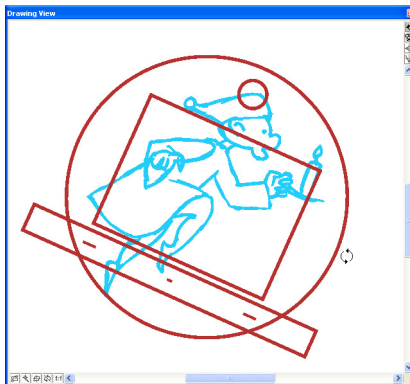
6. Draw the rest of the old man. The completed drawing must fit in the walk cycle, so you must draw the old man's legs so that his left leg is goes down and his right leg is moving up.

When you finish drawing, your old man should look something like this.



You can look at the final drawing in the Drawing\_Final animation project to see how we did it.

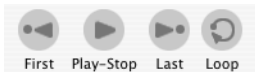
7. To help you with your drawing, you can use the **Rotary Light Table** so that you can get a better angle on the part of the drawing you are working on.
  - ▶ To display the **Rotary Light Table**, hold down [Ctrl]+[Alt] when using Windows or [Ctrl]+[Command] when using MacOS, then use your mouse to freely rotate your drawing space.



- ▶ To return your drawing space to the original angle, select **View > Reset Rotation** or press [Shift] + [C].

## Step 4: Previewing the Old Man Cycle

In this step, you use the Interactive Playback buttons to preview your drawing of the old man and see how it fits into the run cycle.



**To preview the Old Man cycle using Interactive Playback:**

1. In the **Exposure Sheet** window, press [Shift] and select drawings 1 through 8.
2. Press **Play** ►.  
All of the selected content plays in sequential order in the **View** window.
3. If you want the playback to repeat, select the **Loop** ↺ button before you click the **Play** ► button.
4. Make corrections to your old man drawing so that the transition between the drawings in the cycle is logical and smooth.
5. Save your animation project and you are done!

Congratulations on completing the first lesson in this tutorial.

# Lesson 2: Painting

In this lesson, you will paint the old man, and give him some colour.

There are two animation projects for this lesson:

- Painting\_Rough
- Painting\_Final

In the Painting\_Rough animation project, you'll build a colour palette for the old man and create a gradient colour swatch. Then you'll paint the old man using Toon Boom Studio power-paint features that will speed the painting process.



**To start the Painting the Old Man lesson:**

1. Download the Quick Start Tutorial files from the Toon Boom Animation website. You can click the Quick Start Tutorial link on the Welcome Screen to open the appropriate Web page.
2. Open the **Painting\_Rough** animation project in the **Lesson2\_Painting** folder.
3. Save the animation in a location of your choice using **File > Save As**.
4. Click the **Play** ► button and watch the old man walk!

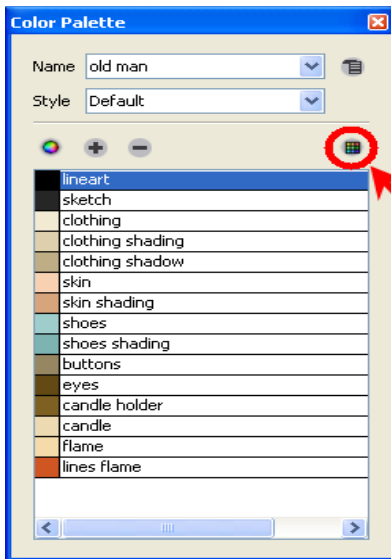
You're going to give the old man some colour, and the candle, a little bit of light!

## Step 1: Adding a Colour Swatch

In this step, you'll add a colour swatch to the old man's colour palette.

**To add a colour swatch:**

1. If the **Properties** window is not open, select **Window > Properties**. The **Properties** window appears.
2. Click the **Colour Palette** tab. The **Colour Palette** tab appears with the default set of colours.
3. From the **Name** drop-list, select **old man**. This is the old man colour palette, which you can use to organize all of the colour swatches for this character.
4. You can click the **Show/Hide Colour Name** button on the right side of the dialog box, just above the swatch scroll bar. This changes the display to a list of swatches and their names.



*This Colour Palette provides all of the colour swatches you need to paint.*

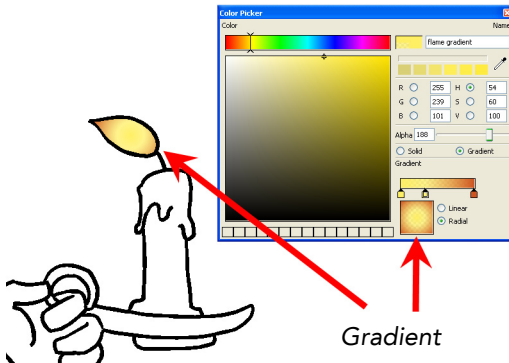
*The Show Colour Names button, displays the names of the swatches.*

5. Select the **lines flame** colour swatch and click the **Add a Colour +** button. A copy of the lines flame swatch appears in the palette style and it is called **New 1** by default. You will edit the properties of this colour swatch in the next step.



## Step 2: Creating a Gradient "Flame" Swatch

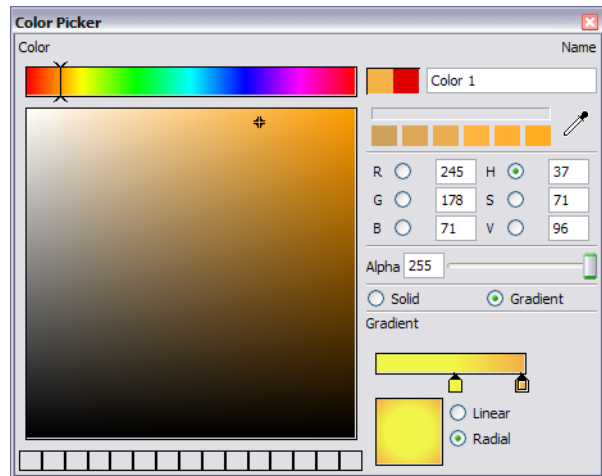
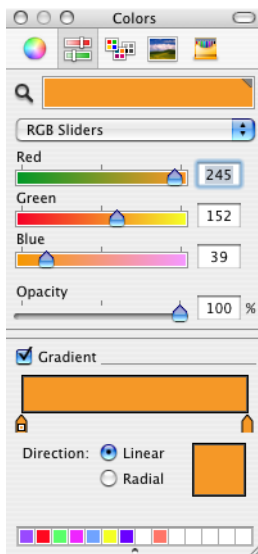
In this step, you will create a gradient for the candle flame. You'll use the swatch you created in the previous step as the basis for the gradient.



To create a gradient:

1. Double-click the colour swatch you added in the last step. You'll use this swatch as a basis for the gradient because the orange colour in the swatch is similar to one of the gradient colours.

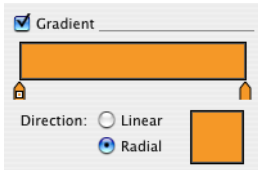
The colour picker opens.



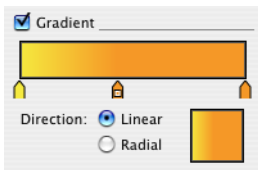
*The look of your colour picker is dependent on your operating system.*

2. Select the **Gradient** option.

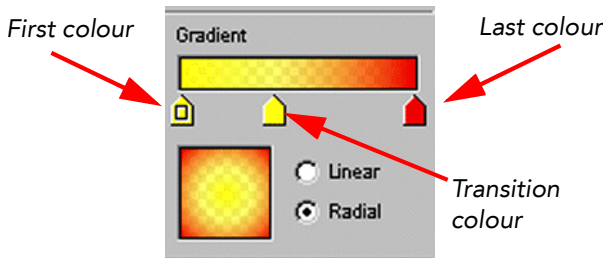
3. In the **Gradient** panel, select **Radial**. The colours in a radial gradient blend in a circular pattern.
4. Click the first marker below the **Gradient** bar. A square appears in the marker to indicate that it is editable.



5. Change the colour of the first marker to yellow by dragging your mouse in the colour swatch. We used these **R, G, B** values: 248, 251, 17. You can use the Colour slider, or enter these values manually, if you want.
6. Click below the **Gradient** bar to add a gradient marker. The colour of the marker is the same as the marker you had selected. Gradient markers represent the start or end of a transition between different colours.



7. Do one of the following:
  - ▶ In the **Opacity** field, type 60 (MacOS).
  - ▶ In the **Alpha** field, type 150 (Windows).
8. Change the value of the last colour to red. You can use these specific values: 236, 0, 0.



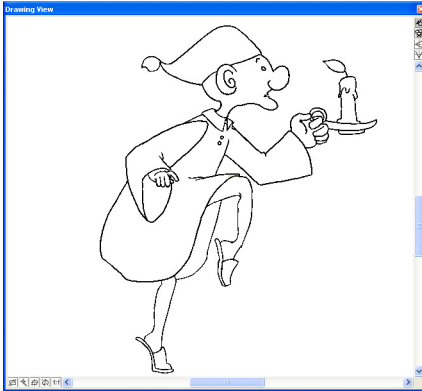
9. Close the colour picker and that's it! You have created a gradient swatch!


## Step 3: Painting the Flame on the Candle

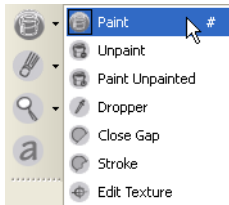
Now that you have created a gradient for the flame, you are ready to paint.

To paint the flame on the candle:

1. In the **Exposure Sheet** window, select the first drawing in the **ColourMe** element. the old man appears in the **Drawing View** window.

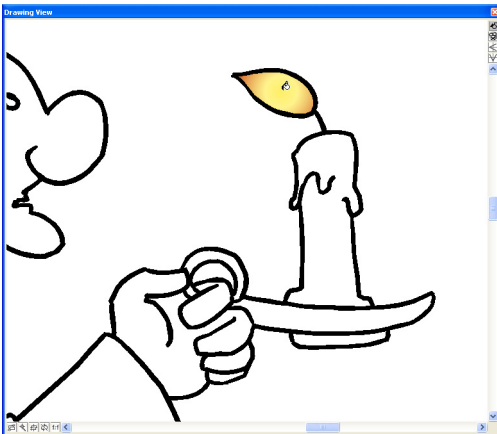


2. Set up the **Drawing View** window so that you have a clear view of the candle.
  - ▶ To turn off the grid, press [G], the default keyboard shortcut.
  - ▶ To zoom in, press [X], and to zoom out press [Z].
  - ▶ To pan the **Drawing View** window, press and hold [Spacebar] and use the **Grabber** tool to change the part of the window you are seeing.
3. Select the **Paint**  tool from the **Drawing Tools** toolbar.



4. From the **Colour Palette** tab, select the gradient swatch you created for the flame.

5. Click the areas of the flame with the **Paint**  tool.



6. Scroll through the old man drawings and paint all of the flame areas.  
Press [S] to advance to the next frame and press [A] to return to the previous frame.  
You'll notice that after you paint drawing 8, you will come to drawings that have already been painted. That's because we repeated drawings 1 through 8 in the element to create a cycle. Because each cell in the Exposure Sheet window refers to a drawing in the animation project, when you update a drawing that is repeated in other frames, Toon Boom Studio updates all frames that reference that drawing.

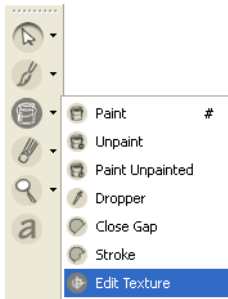
## Step 4: Editing the Direction of the Flame

Now that the candle flame has been painted it requires some minor editing to make it look more natural.

In this step, you will use the **Edit Texture**  tool to change the position and length of the flame gradient.

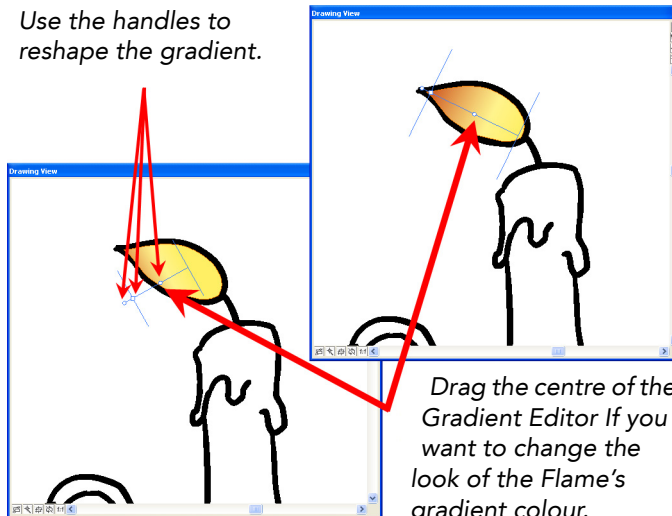
**To edit the flame in the painted zone:**

1. Select the **Edit Texture** tool from the **Drawing Tools** toolbar.



2. With the **Edit Texture** tool, click the flame gradient in one of the old man drawings. The gradient editor appears.
3. Grab the handles to rotate the gradient or change its length. You want to create an effect that looks more natural, so experiment with the **Edit Texture** tool.

*Use the handles to reshape the gradient.*



*Drag the centre of the Gradient Editor If you want to change the look of the Flame's gradient colour.*

## Step 5: Painting the Old Man drawing

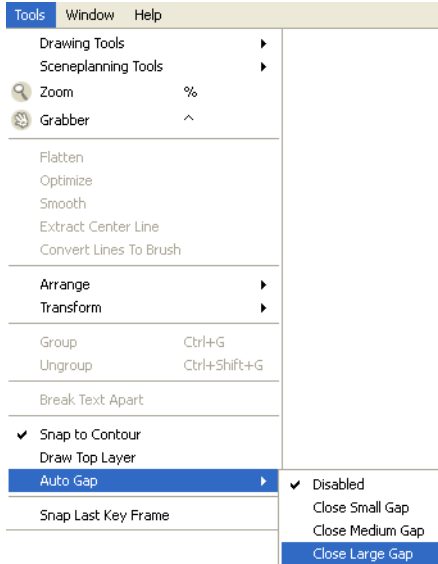
In this step, you are going to use Toon Boom Studio's powerful automatic painting features.

You click a zone in one drawing and Toon Boom Studio scrolls through the rest of the drawings in the elements to check if there is a closed zone beneath where you clicked. If there is a closed zone, Toon Boom Studio automatically paints the zone with the same colour.

Another feature you need to be aware of is auto gap closing, before you can fill a zone with colour, it has to be completely closed. Sometimes, when you draw with the Brush tool, you may not always close zones completely. When you are painting, you can set a threshold for line gaps so that Toon Boom Studio will paint zones regardless of the size of the gap that keeps them open.

**To paint the old man:**

1. From the **Tools > Auto Gap** menu, select **Close Large Gap**.



2. In the **Exposure Sheet** window, select the **colourMe-1** drawing.
3. Press [X] to zoom in on the drawing so that you can see the zones clearly.
4. Select the **Paint** tool from the **Drawing Tools** toolbar.
5. In the **Colour Palette** tab, click the **skin** colour swatch in the **old man** colour palette.
6. Press [Shift]+[Option] in MacOS, or [Shift]+[Alt] in Windows, and click the old man's face. Your pointer changes to indicate that the **Paint All** tool is active.

After it is done, scroll through the drawings to check that the face on all of the drawings are painted with the same skin colour swatch. You may have to manually correct some

drawings because of where you clicked on the drawing (it might overlap other zones, for example).



*Click here with the **Paint All** tool and it will paint the same area in all of the drawings in the element.*

7. Continue to use the **Paint All** tool until all the static areas of your drawing are coloured.
8. Next, you will paint the smaller zones one at a time. Using the names of the colour swatches to identify which zones they belong to on the old man, click those zones with the **Paint** tool. Each zone will be filled with colour.

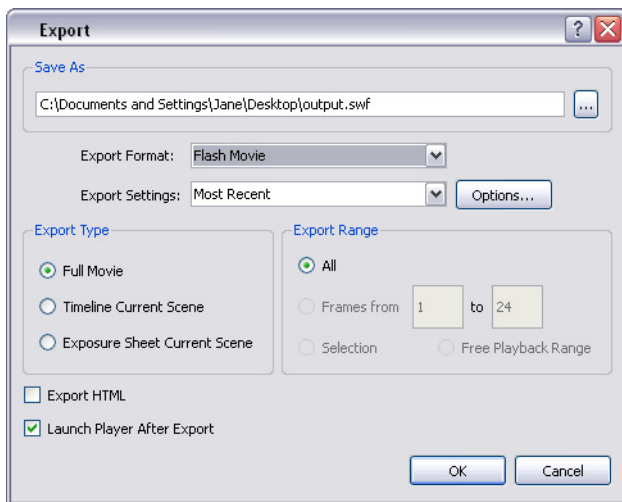


## Step 6: Export

Now you are ready to export your creation and share it with your friends and family.

To export your animation:

1. Select **File > Export Movie**. The **Export** dialog box opens.



2. From the **Export Format** menu, select **Flash Movie**.
3. Select **Default** from the **Settings** menu.
4. Type the name of the movie in the **File Name** field and click the **Browse** button on the right if you want to select an alternate location for the final file.
5. Select **Full Movie** from the **Export Type** panel.
6. Select the **Launch Player After Export** option.
7. Click **OK** to begin the exporting process. A progress bar appears to show you the progress of the export. If you want to cancel the export, click **Cancel**.

When the export process is complete the Adobe Flash movie automatically opens in a Flash player.



## Lesson 3: Lip Syncing

Lip syncing is typically considered to be the most tedious task in the animation process. Traditionally, before you can even begin drawing the lip positions, you have to analyze the voice track to determine what lip position best matches the sound at each frame.

With Toon Boom Studio, the easy-to-use lip sync tool analyzes the sounds in a voice track and generates a lip chart based on the eight animation phonemes. In addition to that, Toon Boom Studio has a tool that will automatically map drawings in an element based on the sounds they match. These two tools together will save you time so that you can focus on more interesting and creative tasks.



*Just look at Deb Ant! So nervous?*

*Looks like she's got something to say.*

There are two animation projects for this lesson:

- Lip\_Sync\_Rough
- Lip\_Sync\_Final

### To start the Lip Sync lesson:


1. Download the Quick Start Tutorial files from the Toon Boom Animation website. You can click the Quick Start Tutorial link on the Welcome Screen to open the appropriate Web page.
2. Open the **Lip\_Sync\_Rough** animation project in the **Lesson3\_LipSync** folder.
3. Save the animation in a location of your choice using **File > Save As**.

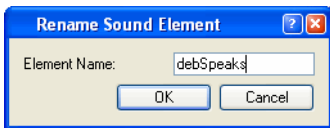
## Step 1: Importing Deb Ant's Voice Track

In this step, you will import a speech made by Deb while she's at the Survivor Ant tribal council meeting.

In Toon Boom Studio, you must import sounds into Sound elements so you must add a sound element first.

**To import Deb Ant's voice track:**

1. Click the **Add Sound Element**  button at the top of the **Exposure Sheet** window. An empty sound element appears in the exposure sheet.
2. Select **Element > Rename Element** and use the **Rename Sound Element** dialog box to name the element *debSpeaks*.



3. Right-click (Windows) or [Control]-click (MacOS) the first cell in the element and select **Import Sound > From File** from the pop-up menu. The **Open** dialog box opens.
4. Browse the **Lesson3\_LipSync** folder and select **please\_dont.MP3** and click **Open**. The sound file now appears in the cell you selected.
5. Turn-up your headphones or speakers, [Control]-click (in MacOS) or right-click (in Windows) the first cell in the *debSpeaks* element and select **Play** from the pop-up menu. Listen as Deb Ant begs not to be kicked out of the tribe.

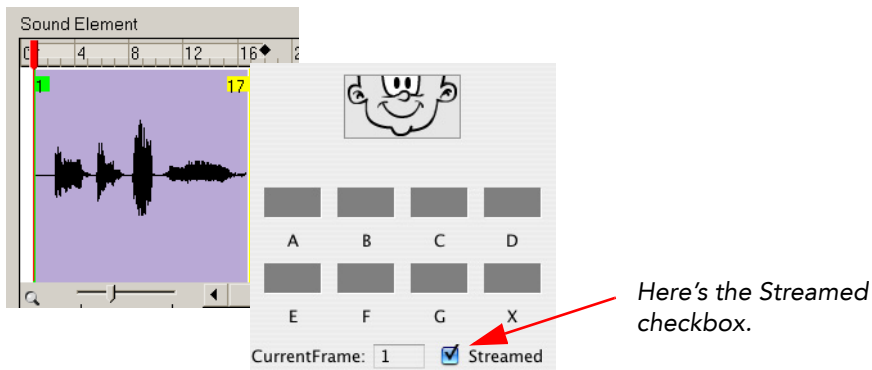
## Step 2: Generating a Lip Chart for Deb Ant

In this step, you will use Toon Boom Studio to generate a lip chart that matches Deb Ant's speech to a set of animation phonemes. You can use the lip chart as a reference as you draw the lip sync images for your characters.

**To generate a lip chart for a Deb Ant's voice track:**

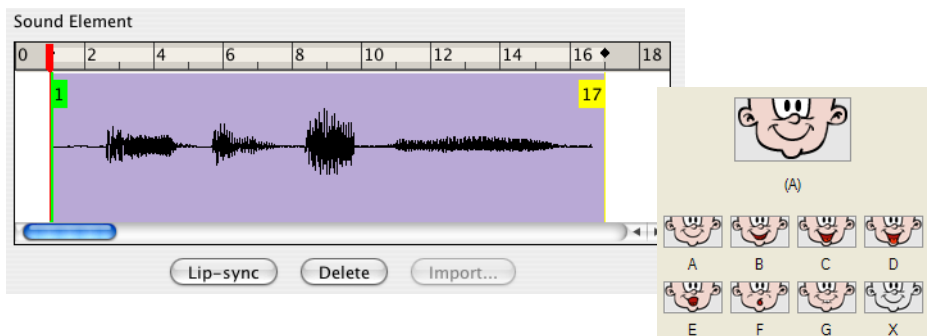
1. Select the *debSpeaks* element and select **Element > Edit Sound**. The **Sound Element Editor** appears.
2. In the **Sound Element** panel, click the wave form of the sound track and click the **Streamed** checkbox to set up this sound for streaming.

Voice tracks are best set as streamed sounds because they begin playing before the entire sound is loaded and will better maintain synchronization with images in Adobe Flash movies.



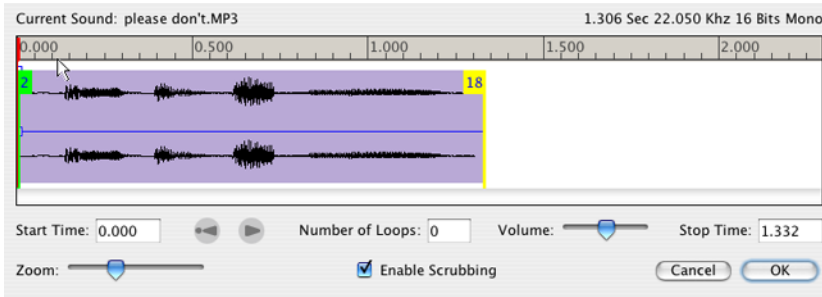
3. Select the waveform in the **Sound Element** panel and click the **Lip-Sync** button. A progress bar appears as Toon Boom Studio analyzes the selected sound clips and assigns a lip sync letter to each frame.

The lip sync images on the right side of the window become active. Drag the frame slider in the **Sound Element** panel to see the lip position for each frame of sound.



4. Select the **Enable Scrubbing** option at the bottom of the **Sound Element Editor**. Scrubbing allows you to slowly play the sound forward and backward.

5. Drag the frame slider at the top of the **Current Sound** panel to “scrub” the sound track and hear for yourself the sound that Deb is making at each frame.



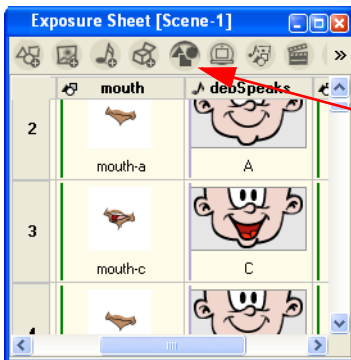
6. Click **OK** to close the **Sound Element Editor** and then save your animation project.

## Step 3: Drawing Deb Ant’s Missing Lips

In the sample Lip Sync lesson, we drew six out of seven of the lip positions for Deb Ant. It is up to you to draw Deb’s lip for the “D” position using the lip sync preview images.

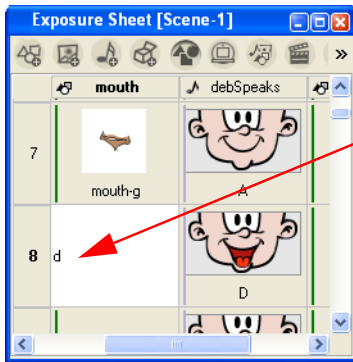
To draw **Deb Ant’s missing lips**:

1. In the **Exposure Sheet** window, press [Ctrl] (Windows) or [Command] (MacOS) and drag the **debSpeaks** element so that it is next to the mouth column. This will make it easier for you to see the lip chart while you are working on Deb’s lips.
2. Right-click (Windows) or [Control]-click (MacOS) a cell in the debSpeaks element and select **Show Lip-sync** from the pop-up menu. Toon Boom Studio displays the phoneme assigned to each frame in the sound.
3. Click the **Toggle Thumbnails** button to show the lip chart.



*This is the Toggle Thumbnails button. Click it and you will see preview images for the lip chart you computed.*

4. Scroll down the Exposure Sheet window. At the frame in the debSpeaks element that is labelled D, you must double-click the equivalent cell in the mouth element and rename the drawing D.



*Cell labels link the contents of the cell to a file in your animation project.*

5. Now, with the lip sync preview image as a reference, draw Deb Ant's lips in the D position. After you have finished drawing her lips, paint them using the swatches in the Deb Ant colour palette on the **Colour Palette** tab.

This is how Deb Ant's lips look in the D position we drew.



#### Here are some tips that will help you out:

- ▶ Use the **Stroke** tool to create a closed zone without visible line art.
- ▶ Use the **Close Gap** tool to close the zone in the neck so that you can paint it.
- ▶ You can copy and paste drawings from previous cells (try the F cell) and modify them to suit the lip position.
- ▶ The lips must fit on Deb Ant's head.
  - ⇒ You can use the onion skin to display the previous and next drawings and use those drawings as a reference.
  - ⇒ You can use the **Auto Light Table** to display other drawings in the frame, including Deb. You will need to hide other elements (using the Element List) to display only selected elements.

- ⇒ You can add a drawing (like the F drawing) to the Static Light Table so that you can use it as a reference.
- ▶ Set up the **Drawing View** window so that you have a clear view of Deb Ant.
  - ⇒ To turn off the grid, press [G], the default keyboard shortcut.
  - ⇒ To zoom in, press [X], and to zoom out press [Z].
  - ⇒ To pan the **Drawing View** window, press and hold [Spacebar] and use the **Grabber** tool to change the part of the window you are seeing.

## Step 4: Auto-Mapping Deb Ant's Lips to Her Voice Track

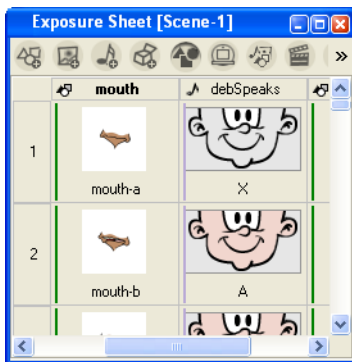
In the Lip Sync Mapping dialog box, you identify each phoneme drawing for a character and then Toon Boom Studio automatically labels all of the cells in the character's element with the appropriate label for each phoneme drawing.

To make this feature really work for you, it is best if you name your drawings with the seven phonemes and the closed mouth position: A, B, C, D, E, F, G, and X.

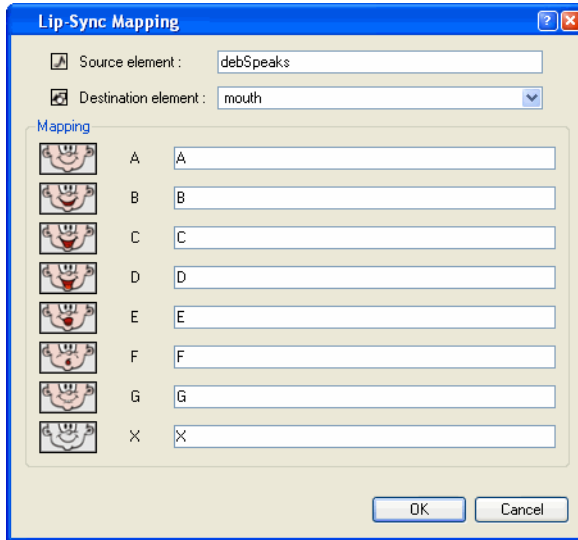
In the mouth element, we have already named all the elements with the letters of the seven plus one phonemes. All you have to do is map the drawings to the phonemes in this element, and Toon Boom Studio will do the rest of the work for you. For Deb's lips, you are going to use the same drawing for the A position and the X position.

**To auto-map Deb Ant's lips to the voice track:**

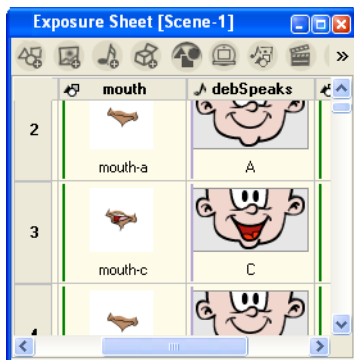
1. Select the first drawing in the mouth element and press the arrow keys to scroll down the drawings in this element. You'll see that the mouth positions do not reflect the lip chart that you generated.



- the title of the debSpeaks element and select **Modify Lip-Sync Mapping** from the pop-up menu. The **Lip-Sync Mapping** dialog box opens.



- From the **Destination element** pull-down list, select **mouth**. This is the element that you are going to apply the auto-map to.
- In the **X** field, type A. For Deb's lips, you are going to use the same drawing for the A position and the X position.
- Click **OK**. The dialog box closes.
- If you scroll through the mouth element now, you'll see that all of the lip drawings have been mapped to the phonemes in Deb's voice track.



## Step 5: Export

It's time to export your lip sync scene.

**To export your animation:**

1. Select **File > Export Movie**. The **Export** dialog box opens.
2. From the **Export Format** menu, select **Flash Movie**.
3. Select **Default** from the **Settings** menu.
4. Type the name of the movie in the **File Name** field and click the **Browse** button if you want to select an alternate location for the final file.
5. Select **Full Movie** from the **Export type** panel.
6. Select the **Launch Player After Export** option.
7. Click **OK** to begin the exporting process. A progress bar appears to show you the progress of the export. If you want to cancel the export, click **Cancel**.

Your Adobe Flash movie opens automatically in a Flash player when the export has finished.



# Lesson 4: Building a Multiplane Scene

One of the great attributes of Toon Boom Studio is the 3D scene space and the camera, which allows you to design multiplane moves and cinematic camera effects.

In this lesson, you'll create a multiplane camera move that follows the action, as well as make the old man cross the room. In the process of all this, you will also get to work a bit with templates and smooth moves using specific features on your motion paths.



There are two animation projects for this lesson:

- Scenepanning\_Rough
- Scenepanning\_Final

**To start the Building a Multiplane Scene lesson:**

1. Download the Quick Start Tutorial files from the Toon Boom Animation website. You can click the Quick Start Tutorial link on the Welcome Screen to open the appropriate Web page.
2. Open the **Scenepanning\_Rough** animation project in the **Lesson4\_Scenepanning** folder.
3. Save the animation in a location of your choice using **File > Save As**.
4. Play back the rough animation by selecting the **Play** command from the **Play** menu. Not really much to see, eh? Nothing moves, nothing happens. Go to Step 1 to create some more interesting visual effects in this scene.

## Step 1: Attaching the Camera to the Peg

The first step in this lesson is to create a camera move using a peg.

The idea of the Toon Boom Studio digital peg system was inspired by traditional 2D cel animation. In traditional animation, cycles of animation are typically drawn in-place. To make characters move through the cycle, animators would use peg bars, which would ensure that the drawings changed position gradually and precisely.

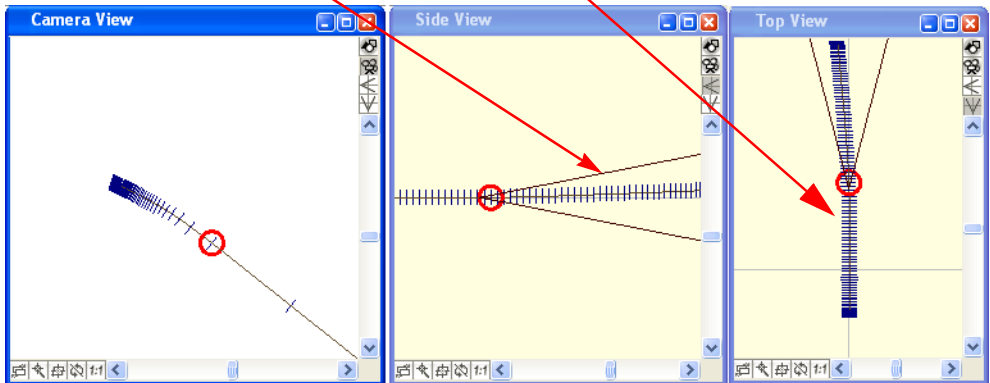
In Toon Boom Studio, you use pegs to create different types of changes over time. In addition to motion, you can also create scaling and rotation effects using pegs.

Toon Boom Studio also features "cameras", which are like traditional cameras that "film" the action in a scene. In Toon Boom Studio, you can combine these two features - cameras and pegs - to create camera moves like trucks and pans.

In Toon Boom Studio, you use one camera and can add up to two pegs in your scene. Using Toon Boom Studio, you can add unlimited cameras and pegs to create even more sophisticated scenes.

*In the View windows, you can see the elements in your scene from the front, side and top:*

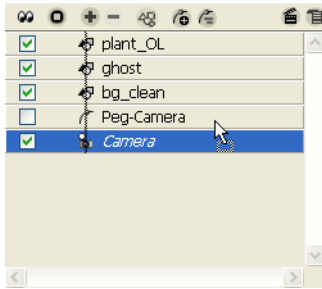
- *Here's a motion path we created with a peg*
- *Here's the camera*



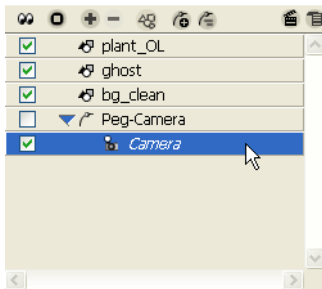
For this step, we've already created the motion path that the camera will follow. All you have to do is attach the camera to the peg.

**To attach the camera to the peg:**

1. In the **Timeline** window, drag and drop the Camera element on top of the **Peg-camera** element.



The Camera element appears indented below the Peg-camera element to indicate that it is attached.



2. Select **Play > Play** to play back the scene. Watch the camera as it follows the motion path of the peg.

## Step 2: Adding the Old Man Template to the Scene

Templates are re-usable pieces of animation that you can share within a scene, with different scenes in the same animation project or with many animation projects. Templates help you reduce your workload through re-use, keep the file size of your animations small, and facilitate working in a group on the same project.

For example, you can create a template of a walk cycle and send the template file (with the extension TBT) to your friend so that she can incorporate it into her animation.

You can create templates out of anything you draw or import into Toon Boom Studio - vector drawings, bitmaps, entire elements, groups of elements, sound or SWF files. With a template, you have a package of all the objects, making it easy to transport and manage. If you create templates from multiple elements, Toon Boom Studio even maintains timing (exposure) and layout information with the templates.

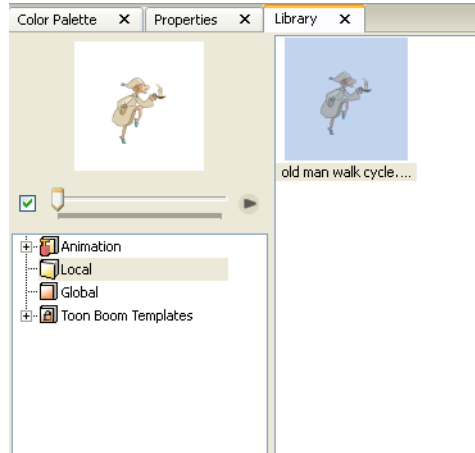
We created a template of the walk cycle of the painted old man. All you have to do is to drag it into the Timeline window and you will have added it to your scene.

**To add the old man template to the scene:**

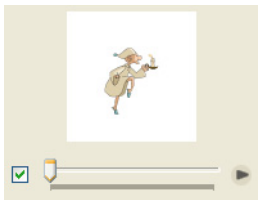
1. Select **Window > Library** to open the **Library** window. The Library window is your center for Toon Boom Studio content management.

From the Library window, you can use:

- The **Animation folder** to access all of the vector drawings in your animation.
- The **Local folder** to manage all of the templates in your current animation project. Local templates are available to the current animation project only.
- The **Global folder** to manage all of the templates on your system. Global templates are available to all animation projects on your system.

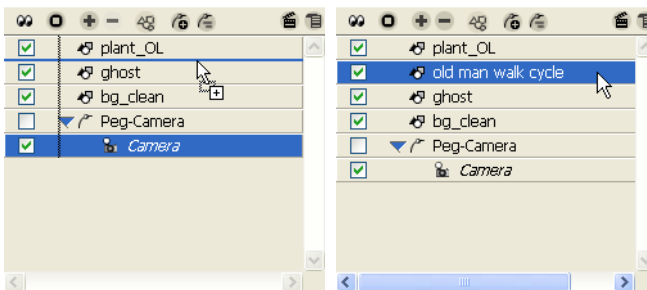


2. Open the **Local** folder, double-click the **old man walk cycle.tbt** file and click the **Play** button in the Library window's preview panel. Watch the old man walk in place.



*This is the Library Preview panel.*

3. Drag the old man template file, from the **Library** window to the **Timeline** window. Drop it just under the **plant\_OL** element in the list.



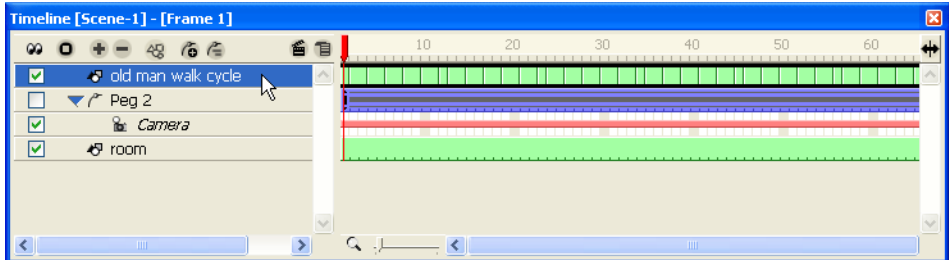
4. Save your animation project and move on to the next step, where you will make old man walk across the room.

## Step 3: Adding and Attaching a Peg to the Old Man

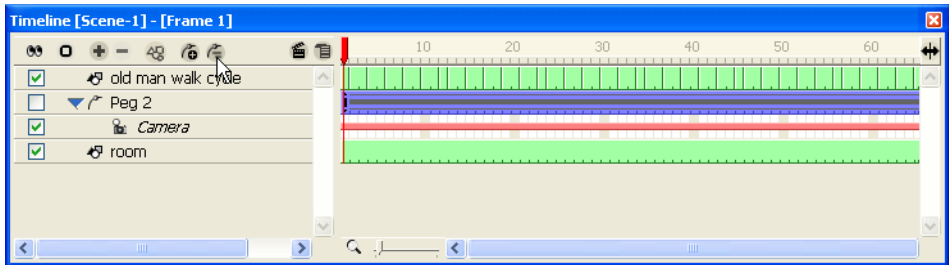
This is the first step to creating a motion path for the old man.

To add a peg and attach the old man to it:

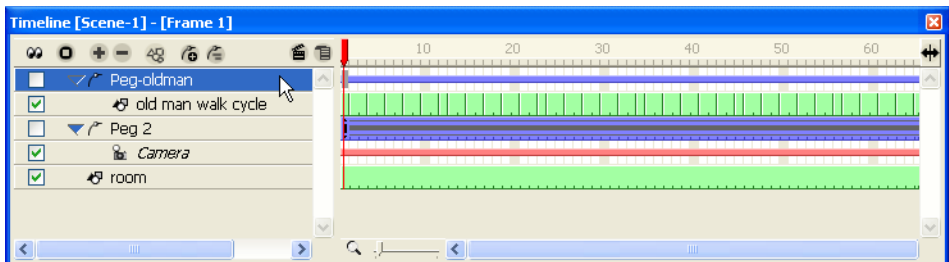
1. In the **Timeline** window, select the **old man walk cycle** element.



2. Click the **Add Parent Peg** button at the top of the **Timeline** window to add a Peg element to your animation and attach the old man walk cycle element as its child element.



3. With the Peg selected, select **Element > Rename Peg Element** to open the Rename Element dialog box and change the name of the peg to **Peg-oldman**.
4. Click OK to confirm the name change.



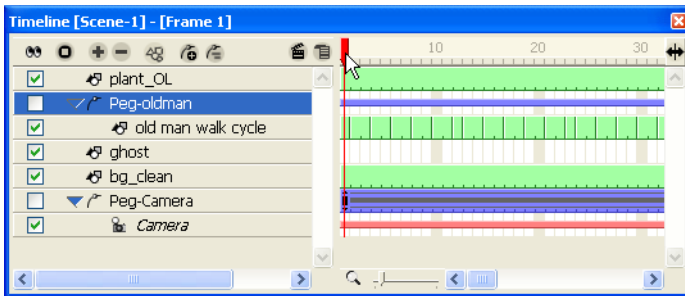
## Step 4: Creating a Motion Path for the Old Man


This is the biggest step in this lesson. In this step you will get to do something a bit more challenging - you're going to make a motion path with the peg you just added. This motion path will move the old man from the west to east side of the stage.

You will use three Sceneplanning view windows to design and play back your motion effect.

### To create a motion path:

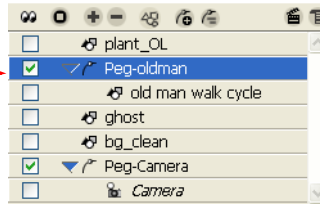
1. Advance the red frame slider at the top of the **Timeline** window to frame 1, where the old man peg will start.



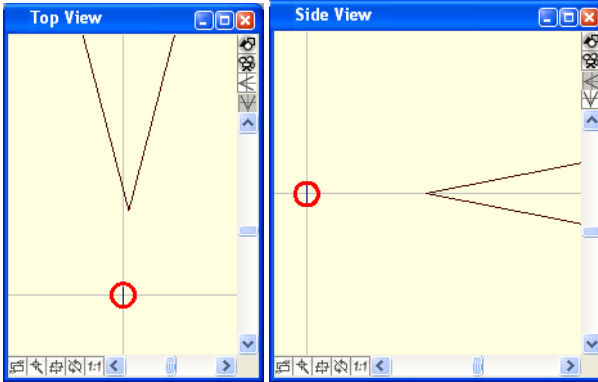
2. In the **Timeline** window, select the Peg element you just added and the **Show/Hide**  button at the top of the window so that no elements are showing.
3. Click the checkboxes next to the Peg-oldman and Camera elements so that only they are displayed.

At this point, your peg is just a red circle at the center of the **Top View** and **Side View** windows.

Use the Show/Hide checkboxes to display the elements

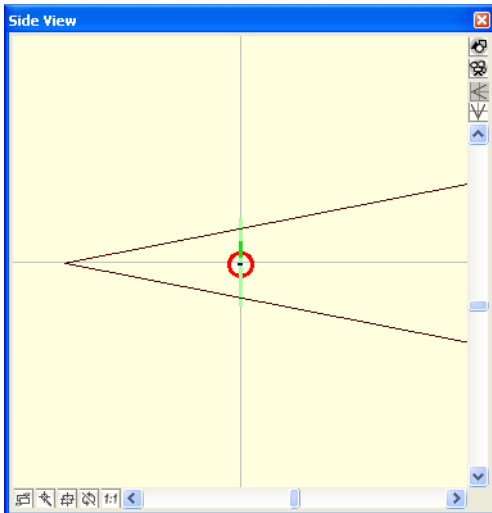


Your **Top View** and **Side View** windows will look something like these. You may have to zoom and pan your windows to get the same views of these windows.

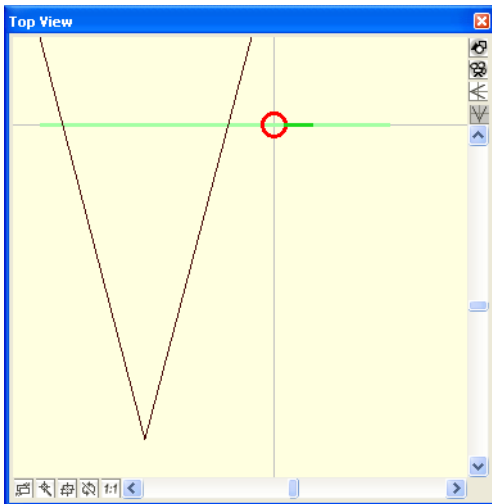


- To pan a window, press [Spacebar] and use the Grabber tool to move your view of the window.
- To zoom in, press [X].
- To zoom out, press [Z].
- To reset the view, press [Shift]+[V].

4. With the **Select** tool, drag the center of the peg's red circle to move the peg in the **Top View** or **Side View** windows.
  - In the **Side View** window, the peg should stay in the middle as shown, you should not need to move anything.

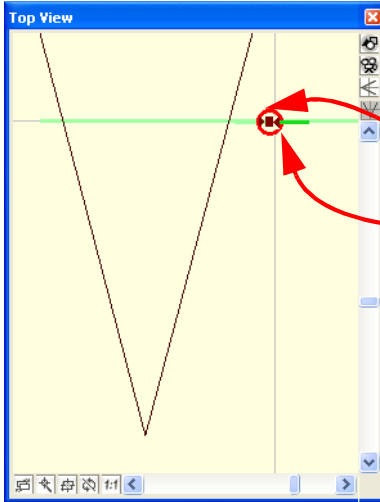


- In the **Top View** window, place the peg a little bit past the east side of the camera angle.





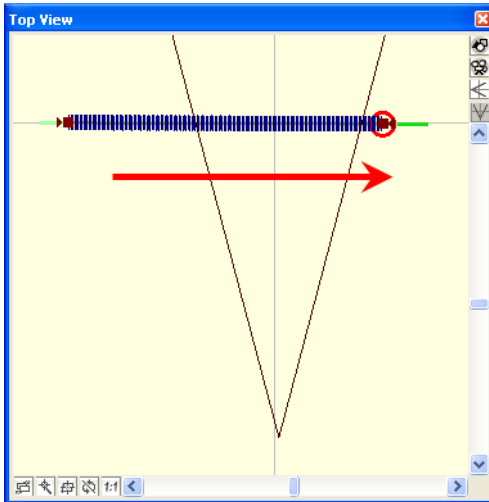
5. Make sure you have the Peg element selected in the **Timeline** window and select **Tools > Sceneplanning Tools > Motion** to activate the **Motion** tool.



When you activate the Motion tool, two keyframes appear on the peg.

- The first keyframe is on the left.
- The last keyframe is on the right.

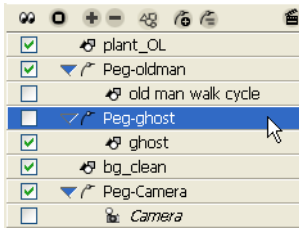
6. With the **Motion** tool in the **Top View** window, drag the last keyframe on the motion (which is on the right) path towards the east side of the camera frame.



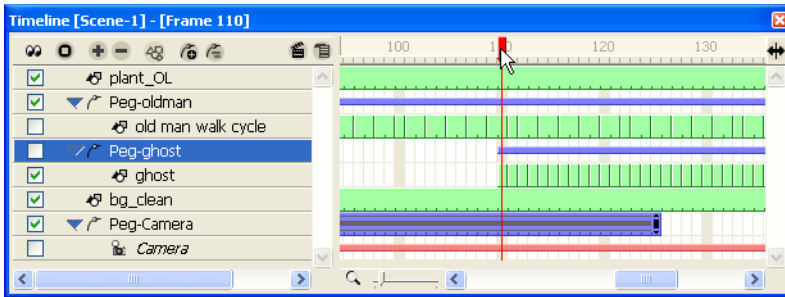
## Step 5: Creating a Motion Path for the Ghost

Now is the time to add a little bit of atmosphere to our scene, we will introduce a ghost into the room, this explains the reason that the old man is moving so carefully.

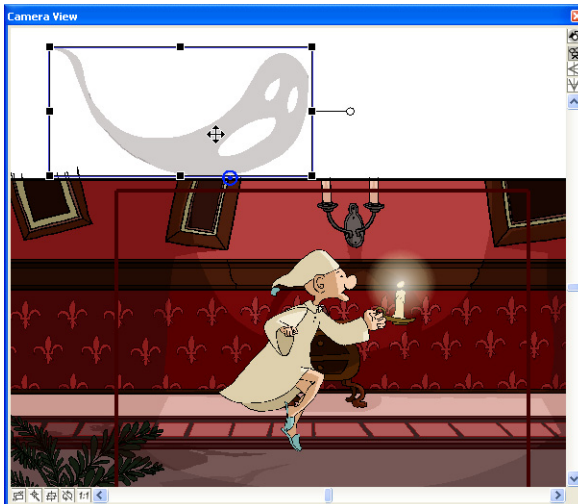
1. Create a new peg for the ghost.



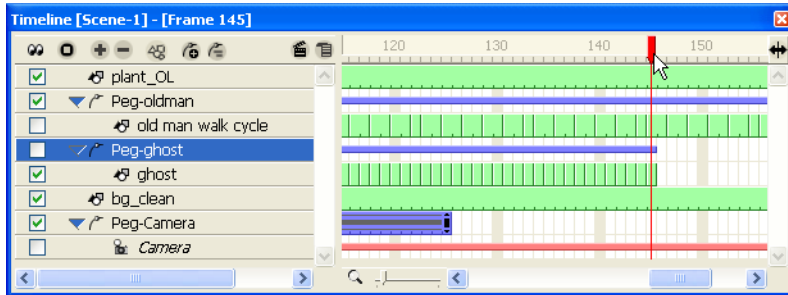
2. Advance the red frame slider at the top of the **Timeline** window to frame 110, where the ghost peg will start.



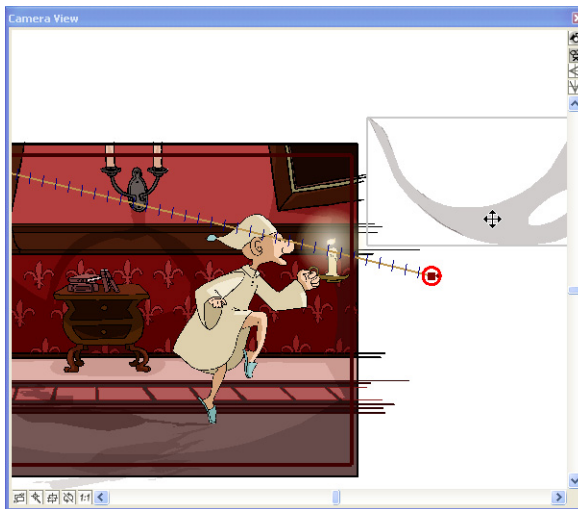
3. Select the first frame of the ghost's peg and use the **Motion** tool to place the ghost outside of the camera frame in the camera view.



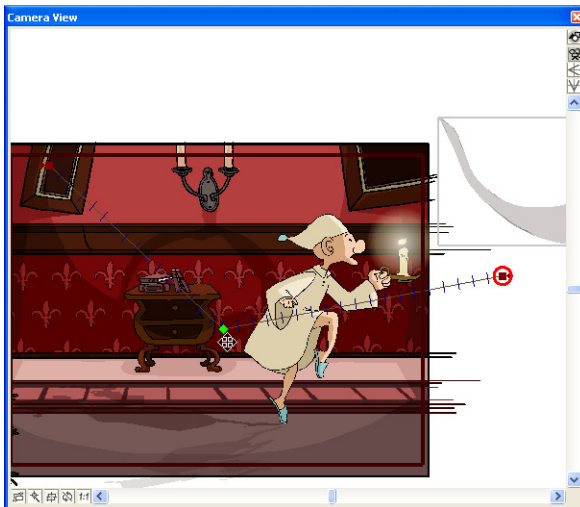
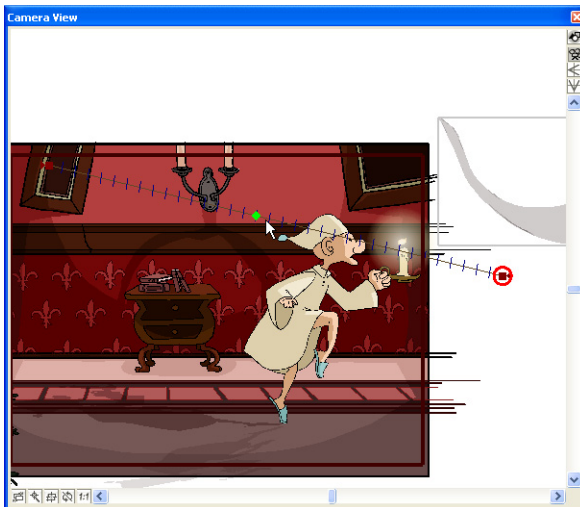
4. Advance the red frame slider at the top of the **Timeline** window to frame 145, where the ghost will end.



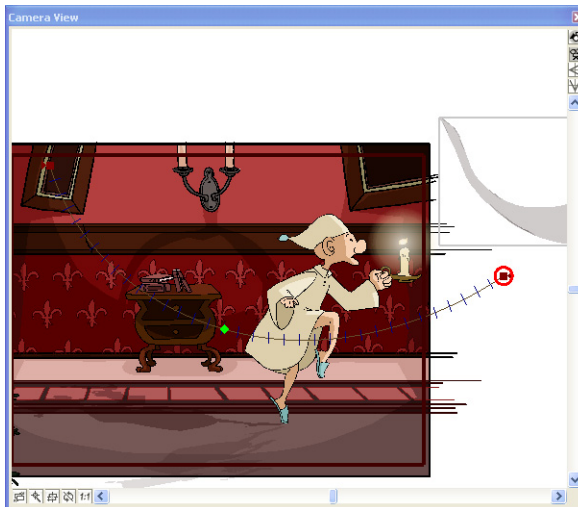
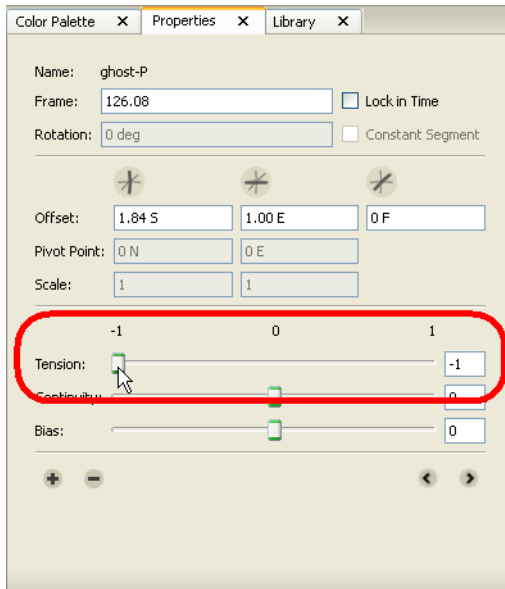
5. Use the motion tool to drag the ghost outside of the scene so that it crosses the screen.



6. Hold [Shift] and click the middle of the motion path for a **motion point** to be added to the path as a **green dot**. You can now drag the green motion point to create a Vee-shaped path.

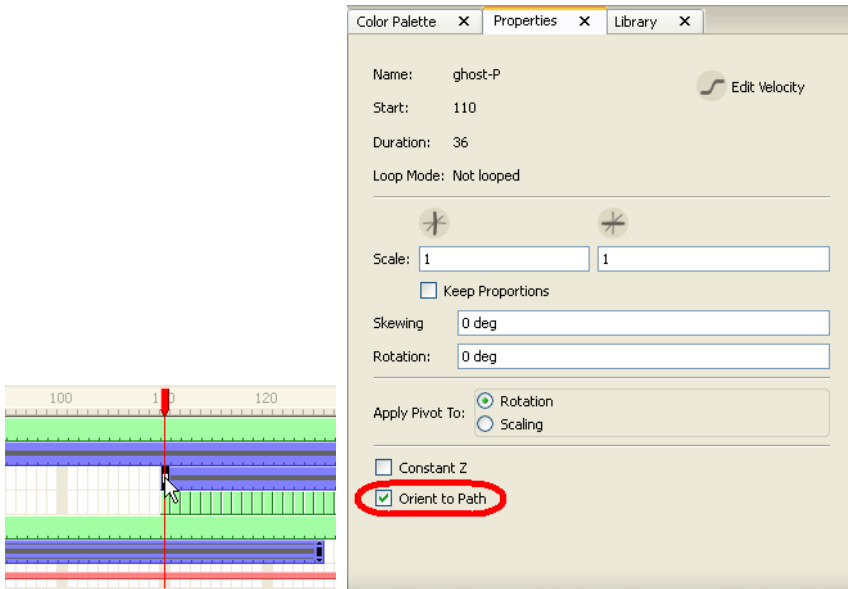



- Click on the green motion point to change the information in the properties window. You can now change the tension to -1 for the Vee-shaped motion path to be changed to a round-shaped motion path.



- Select the first **keyframe** of the ghost's peg in the **Timeline** window for the properties information to change. You will now have the option "Orient to Path".

9. Activate this option. The ghost will now follow the path, creating a much smoother animation.



10. Click the **Show/Hide**  button to show all elements in your animation and then select **Play > Quick Preview**. This command renders your final animation so that you can play it back in real-time.
11. Use the Playback window to watch the old man walk across the room as the ghost passes quickly by.



## Step 5: Export

Well, you have successfully created a multiplane camera move and motion path. Now it's time to package your creation so that you can share it with friends and family!

**To export your animation:**

1. Select **File > Export Movie**. The **Export** dialog box opens.
2. From the **Export Format** menu, select **Flash Movie**.
3. Select **Default** from the **Settings** menu.
4. Type the name of the movie in the **File Name** field and click the **Browse** button if you want to select an alternate location for the final file.
5. Select **Full Movie** from the **Export Type** panel.
6. Select the **Launch Player After Export** option.
7. Click **OK** to begin the exporting process. A progress bar appears to show you the progress of the export. If you want to cancel the export, click **Cancel**.

If you had any trouble with this lesson, check out the `Sceneplanning_Final` animation project to see how we did it.

# Lesson 5: Creating Cross-Dissolves with Colour Transform Elements

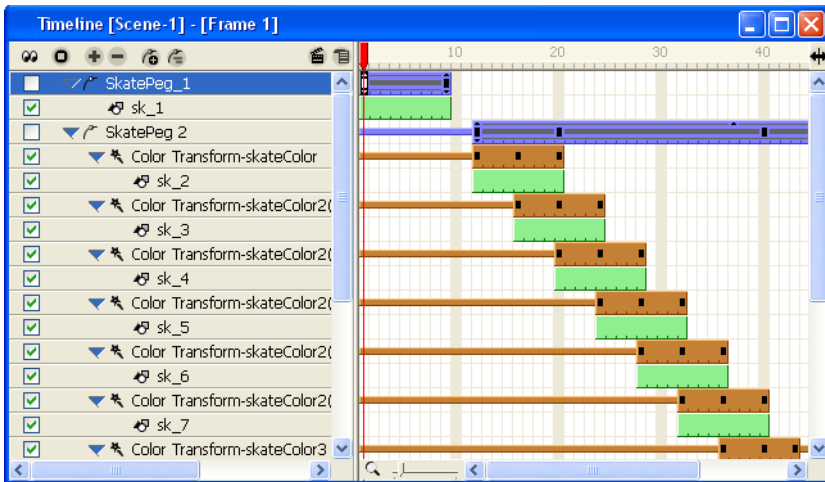
Toon Boom Studio includes a **Colour Transform** element, which you can use to change the colour properties of an element over time.

In the lesson scene, a skater does some fancy tricks on a half-pipe. To accentuate his daring boardwork, you will use a **Colour Transform** element to create a series of cross-dissolves that change the transparency of the skater at different frames.

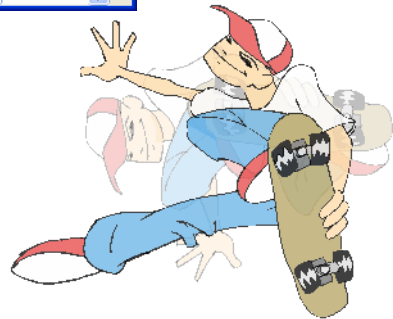
There are two animation projects for this lesson:

- ColourFX\_rough
- ColourFX\_Final

You will use the ColourFX\_Rough animation project to follow the steps in the lesson. When you have questions that you are not sure about, you can refer to ColourFX\_Final to see how we did it.



*You will work mostly in the Timeline window to add and modify Colour Transform elements to create cross-dissolves.*





**To start the Creating Colour Effects lesson:**

1. Download the Quick Start Tutorial files from the Toon Boom Animation website. You can click the Quick Start Tutorial link on the Welcome Screen to open the appropriate Web page.
2. Open the **ColourFX\_Rough** animation project in the **Lesson5\_ColourFX** folder.
3. Save the animation in a location of your choice using **File > Save As**. Saving this animation project to a new location will ensure that you always have the original to return to and use should you want to.
4. Select **Play > Play** to play back the rough animation.

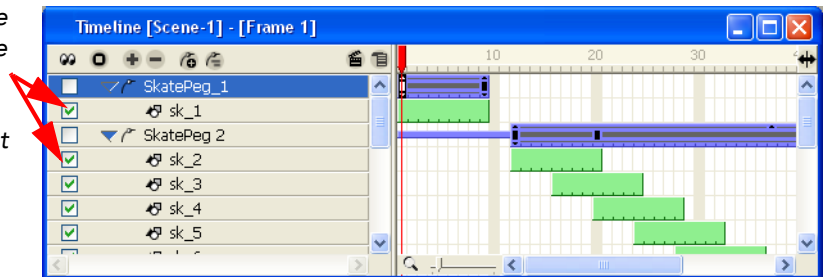
Notice how two images of the skater appear to overlap for several frames? Well, in this lesson, you are going to make the overlapping images fade-in/out to create a series of cross-dissolves (chain mix).

## Step 1: Adding the First Colour Transform Element

To change the colour of a drawing or image element over time, you attach it to a Colour Transform element and then use this element to specify how the colours in the elements attached to it will change.

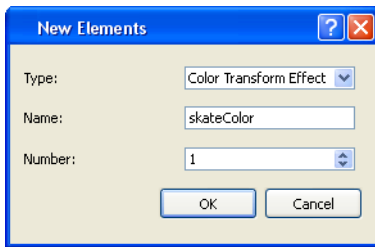
During the cross-dissolve you will create, two drawings will appear at the same time, one fades in while the other fades out. To achieve this effect, we placed each drawing in a separate element layer so that you can control them independently. You'll see as we progress through the lesson how this enables you to create cross-dissolves.

*We have put the drawings for the skater in different elements so that we can create the cross-dissolve effect.*

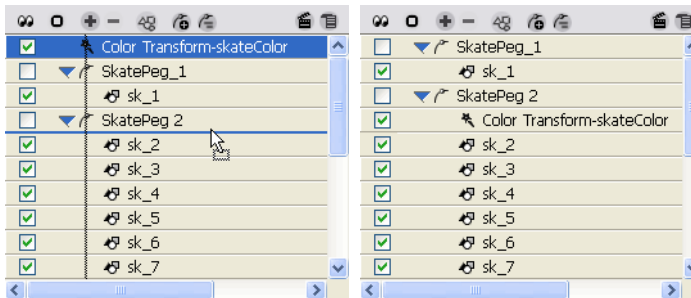


**To add the first colour transform element:**

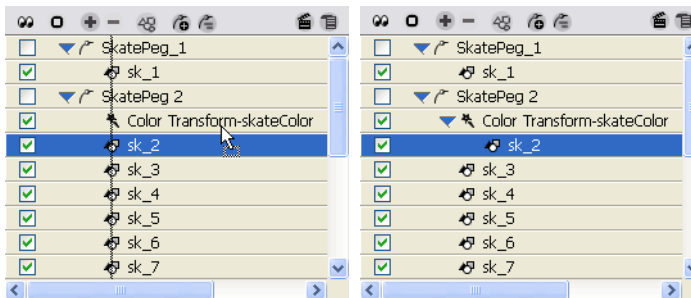
1. Click the **Add +** button at the top of the **Timeline** window. The **New Elements** dialog box opens.



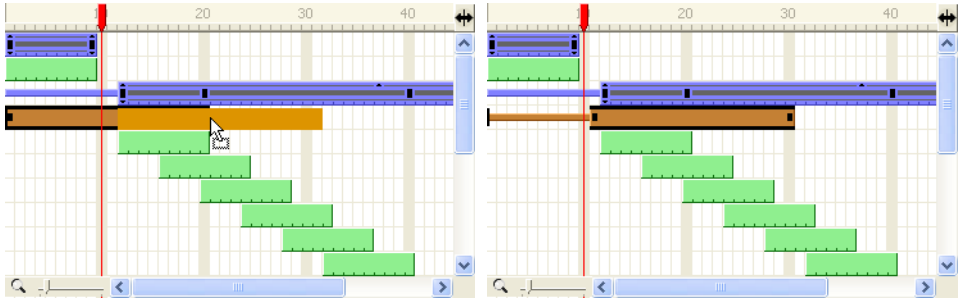
2. Enter information about the element in the **New Elements** dialog box:
  - ▶ From the **Type** menu, select **Colour Transform Effect**.
  - ▶ In the **Name** field, type `skateColour` and click **OK**. A new element layer appears in the **Timeline** window.
3. In the element list on the left-side of the **Timeline** window, attach the **Colour Transform-skateColour** element to the **SkatePeg2** element by dragging and dropping it just below the peg.



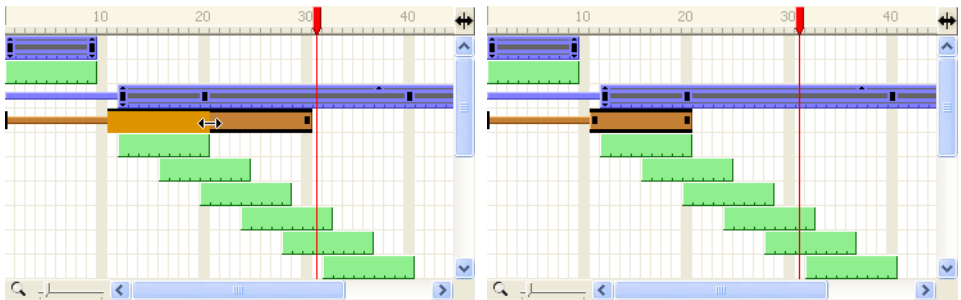
4. Attach the **sk\_2** element to the **Transform-skateColour** element by dragging and dropping it on top of the effects element.



5. Change the start and duration of the **Transform-skateColour** element so that it matches the start and duration of the **sk\_2** element.
  - ▶ Double-click the trackbar of the **Transform-skateColour** element to select it and drag it to frame 12.



- ▶ Drag the end of the trackbar so that it ends on the same frame as the **sk\_2** element (frame 20).



6. Select **File > Save** to save your animation project.

## Step 2: Adding Keyframes and Set their Values

In the first Colour Transform effect, the drawing should fade out from frame 16 to frame 20.

To achieve this, you must add a keyframe at frame 16. Then, at the keyframe on frame 20, you must make the attached elements completely transparent.

With colour transforms, you can chose to do an additive or a multiplicative colour transform.

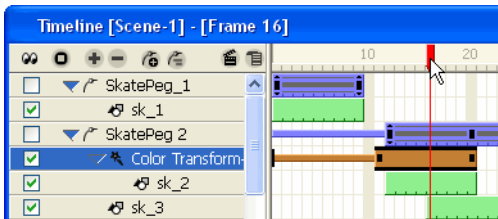
- In additive colour transformations, you select a colour value that is added to all of the colour values in an element.
- In multiplicative colour transformations, you select a value (usually between 0 and 1) and multiply this value with all of the colour values in an element to arrive at a final value.

Because the effect you want to create in this lesson is an even transformation of the alpha value (transparency) of element colours, you will create multiplicative colour transformations.

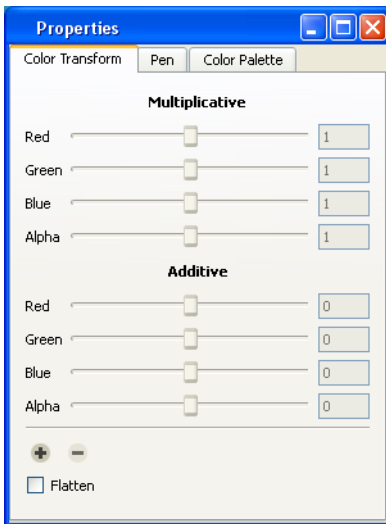
To make an element change from transparent to opaque to transparent, you must multiply the alpha values by 0, 1, and 0. When you multiply an opaque colour (255 alpha) by 0, the result is 0 which makes the colour transparent.

**To add a keyframe and set its value:**

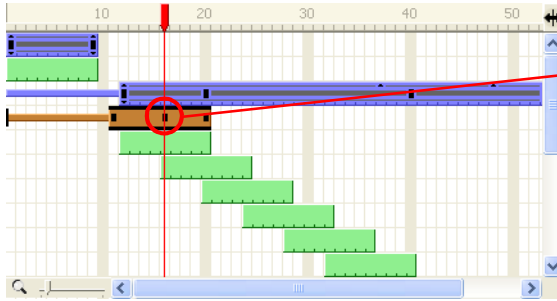
1. Advance the red frame at the top of the **Timeline** window to frame 16.



2. From the element list on the left-side of the **Timeline** window, select the **Transform-skateColour** element. Notice in the Properties window (**Window > Properties**) that the **Colour Transform** tab opens.

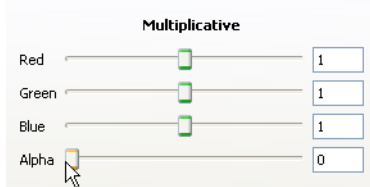


- In the **Colour Transform** tab, click the **Add +** button to add a keyframe to the selected frame on the **Transform-skateColour** element.



*A square appears in the Timeline to identify the keyframe on the trackbar.*

- Advance the red frame slider at the top of the Timeline window to frame 20.
- On the **Colour Transform** tab, drag the **Alpha** slider in the **Multiplicative** section of the tab all the way to the left. The value should appear as 0 in the **Alpha** field.



- Drag the red frame slider at the top of the window from frame 11 to 20 and watch as the element fades-out.
- Select **File > Save** to save your animation project.

## Step 3: Creating the Next Colour Transform Effect

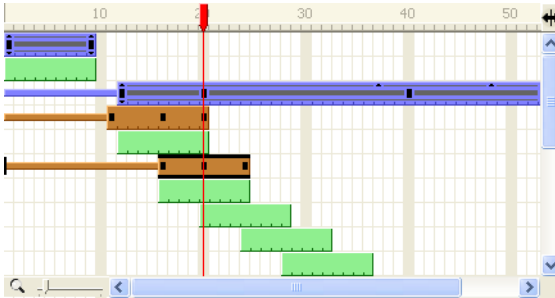
In this step, you are going to create another colour transform effect, for the next element in the series, that will go from transparent to opaque to transparent.

To achieve this effect, you will add a Colour Transform element, set three keyframes, and multiply the alpha value at each keyframe by 0, 1, and 0.

**To create the next colour transform effect:**

- Add a **Colour Transform** element and name it `skateColour2`.
- Drag and drop the **Colour Transform-skateColour2** element just before the `sk_3` element in the element list. This will also attach it to the SkatePeg 2 element.
- Attach the `sk_3` element to the **Colour Transform-skateColour2** element.
- Change the start frame of the **Colour Transform-skateColour2** element so that it matches the `sk_3` element. Start frame: 16; End frame: 24.

5. Add a keyframe to the **Colour Transform-skateColour2** element at frame 20. Your Timeline window should now look something like this:



6. In the **Colour Transform** tab, set the keyframes to the following multiplicative alpha values:
  - ▶ Frame 16: 0
  - ▶ Frame 20: 1
  - ▶ Frame 24: 0
7. Drag the red frame slider from frame 16 to 24 and watch how the first element fade out as the second one fades in and then out again.

You'll notice how the drawing in the next element appears for the last five frames. In the next step you'll use the exact same colour transform element to fix all of the other elements so that they undergo the same colour transform effect.

8. Select **File > Save** to save your animation project.

## Step 4: Cloning the Colour Transform Effect

All of the remaining elements, except for the last, must undergo the same colour transform effect as you created in Step 3. Rather than duplicating your efforts, you can just clone the Colour Transform element and attach the other elements to it.

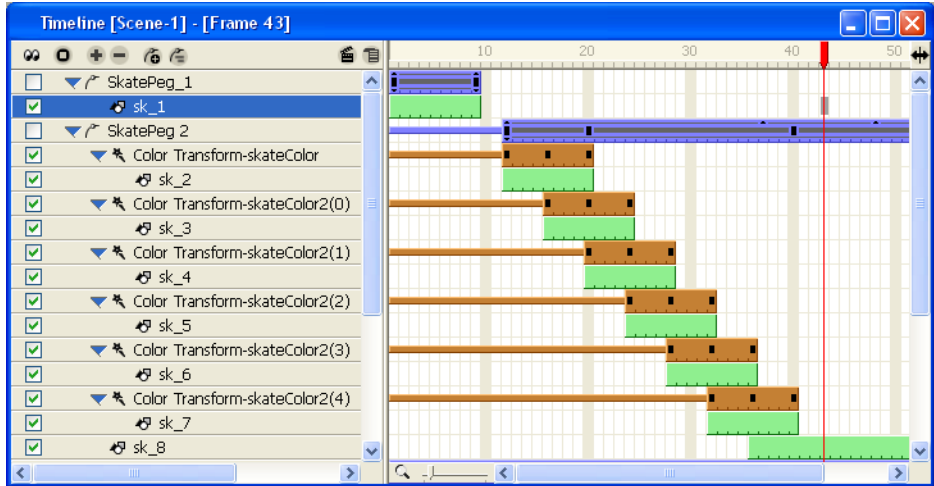
When you clone a Colour Transform element, all of the information stored in the effect are duplicated so that you do not have to re-create keyframes or their values. If you update any one clone with new values, Toon Boom Studio will update all the other clones with the new values.

**To clone the colour transform effect follow these steps:**

1. In the **Timeline** window, select the **Colour Transform-skateColour2** element.
2. Select **Element > Clone Element**. Toon Boom Studio creates a new element and names it **Colour Transform-skateColour2(1)** and renames the original element **Colour Transform-skateColour2(0)**. The new element appears at the top of the element list in the Timeline window.
3. Attach the new element to the **SkatePeg2** element and attach the **sk\_4** element to the **Colour Transform-skateColour2(1)** element.

4. Drag the trackbar of the colour transform element so its start/end frame matches the element you want it to transform.
5. Repeat the previous steps for the elements **sk\_4** to **sk\_7**. Make sure that as you attach the skater elements to the Colour Transform elements that you maintain their layer order in the element list.

When you are done, your **Timeline** window should look like this.



6. Select **Play > Play** to play back the rough animation.

You just have to create the effect for the last element in the series and the effect will be complete!

7. Select **File > Save** to save your animation project.

## Step 5: Creating the Last Colour Transform

Now, all that is left is the colour transform for the last element that makes up the skater.

For the last colour transform effect, the skater will start out transparent, become fully opaque and remain opaque for the rest of the scene.

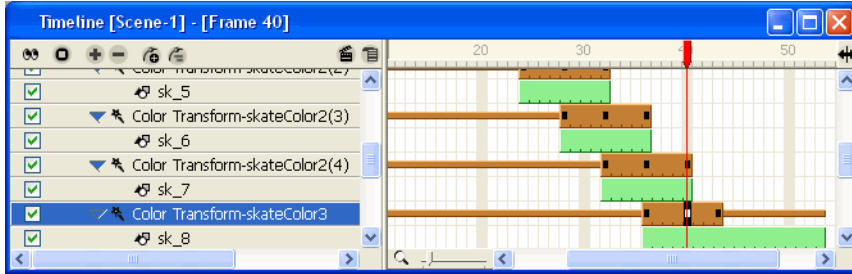
To create this effect, you will add one keyframe to a Colour Transform element, give the first keyframe a multiplicative alpha value of 0 and give the second keyframe a multiplicative alpha value of 1.

This step is basically the reverse of step 2, in which you made the character start opaque and then end transparent.

**To create the last colour transform:**

1. Add a Colour Transform element and name it *skateColour3*.
2. Attach the **Colour Transform-skateColour3** element to the **SkatePeg2** element and attach the **sk\_8** element to the **Colour Transform-skateColour3** element.

3. Change the duration of the **Colour Transform-skateColour3** element to 9 frames and make the element start on frame 36.
4. Add a keyframe to frame 40 of the **Colour Transform-skateColour3** element. Your Timeline window will look something like this:



5. In the **Colour Transform** tab, set the keyframes on the colour transform element to the following multiplicative alpha values:
  - ▶ Frame 36: 0
  - ▶ Frame 40: 1
6. Select **File > Save** to save your animation project.

## Step 6: Export

That's it! You've created a pretty nifty colour transform effect with one of Toon Boom Studio's latest effects.

All that is left to do is to export your animation and watch it play!

### To export your animation:

1. Select **File > Export Movie**. The **Export** dialog box opens.
2. From the **Export Format** menu, select **Flash Movie**.
3. Select **Default** from the **Settings** menu.
4. Type the name of the movie in the **File Name** field and click **Browse** button if you want to select an alternate location for the final file.
5. Select **Full Movie** from the **Export Type** panel.
6. Select the **Launch Player After Export** option.
7. Click **OK** to begin the exporting process. A progress bar appears to show you the progress of the export. If you want to cancel the export, click **Cancel**.

After the animation is rendered, a **Playback** window will open and play back your animation.

That's it! If you had any trouble with this lesson, check out the **Colour\_FX\_final** animation project to see how we did it.



# Lesson 6: Creating Clipping Mask Effects

Toon Boom Studio includes a Clipping Effect element, which you can use to mask out parts of an image to reveal only those portions you want to.

In the lesson scene, you will merge two extreme sports scenes (mountain bike guy and surfer guy) using a mask to reveal the second scene. While you work on this effect, we hope you learn some other things too!



*See the wave hot on the trail of the biker?*

*That is created by a mask element in the shape of the wave, which reveals an image of a wave below it.*

There are two animation projects for this lesson:

- MaskFX\_Rough
- MaskFX\_Final

You will use the MaskFX\_Rough animation project to follow the steps in the lesson. When you have questions that you are not sure about, you can refer to MaskFX\_Final to see how we did it.

## To start the Creating Clipping Mask Effects lesson:

1. Download the Quick Start Tutorial files from the Toon Boom Animation website. You can click the Quick Start Tutorial link on the Welcome Screen to open the appropriate Web page.
2. Open the **MaskFX\_Rough** animation project in the **Lesson6\_MaskFX** folder.
3. Save the animation in a location of your choice using **File > Save As**. Saving this animation project to a new location will ensure that you always have the original to return to and use should you want to.
4. Select **Play > Play** to play back the rough animation.

Notice how the two scenes - the one of the biker and the other of the surfer - just run into each other? In this lesson, we'll create a transition between these two scenes out of a clip in the shape of a wave, which will reveal the surf scene. Take a look at the final animation project, MaskFX\_Final, if you want to see what you will do.

## Step 1: Drawing the Mask

Like the masks worn by partiers at a Halloween ball, a Toon Boom Studio mask reveals certain visual elements while hiding others (like a Halloween mask reveals the eyes of the wearer, while covering most of the face).

For the first step in the creation of the mask effect, you must draw the mask that will reveal image(s) below it. You can only create masks from vector drawings.

We have already drawn a mask for you. The mask consists of a cycle of vector drawings of a wave, which will cut out an image of rolling waves beneath it. Take a look at the mask we drew so that you know what you can do when you create your next clip effect solo.



*With the onion skin on, you can see the cycle of drawings that fit together to make the mask.*

**To review the mask we created:**

1. In the wave\_mask element column in the **Exposure Sheet** window, press [Shift] and select frames 15 through 36.
2. Select **Play > Play** to play back the selection.

Notice the wave cycle is a collection of painted vector drawings. The painted areas of these drawings will be like the holes in the Halloween mask that will let the images below it show through, assuming the shape of the mask drawings.

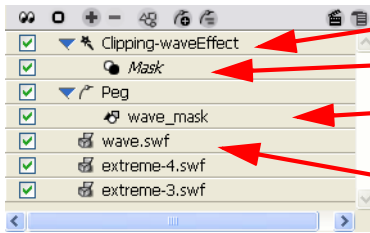
## Step 2: Building the Clipping Element

After you have created the vector drawings that will act as your mask, or in this case, have seen the vector drawings that will act as the mask, you are ready to add the Clipping Effect element.

Clipping Effect elements consist of two parts: the clip element and the mask parameter.

- To the clip layer, you attach the elements that you want to show through the mask.
- To the mask parameter, you attach the vector drawing element that you want to use as a mask.

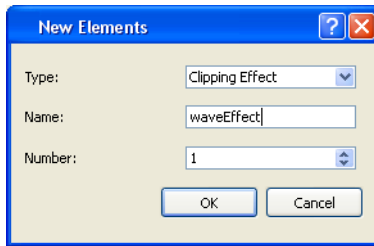
You will notice in our setup, that we have attached the wave\_mask vector element to a peg, that moves the wave in the scene.



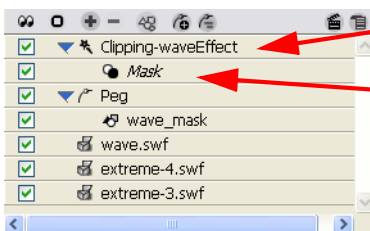
- Here's the clip layer.
- Here's the mask parameter.
- Here's the vector element that is attached to the peg.
- Here's the clip that will "show through" the mask.

### To build the mask element:

1. Click the **Show/Hide** checkbox next to the wave\_mask element so that you can see it.
2. Click the **Add +** button at the top of the Timeline window. The New Elements dialog box opens.
3. From the **Type** drop-list, select **Clipping Effect**, type waveEffect in the name field and click **OK**.

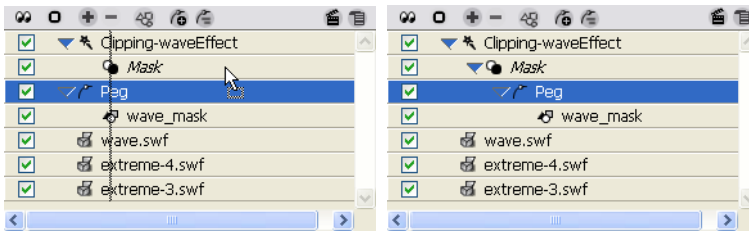


The **Timeline** window will look like this:

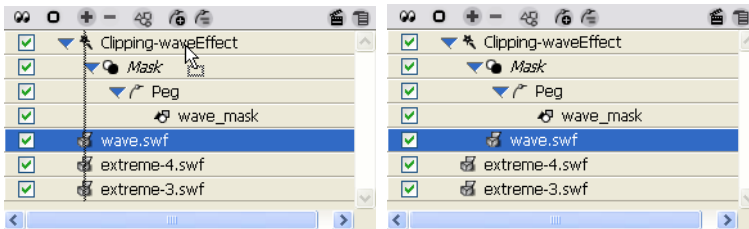


- Here's the Clipping layer.
- Here's the Mask parameter.

4. Drag and drop the Peg element on top of the Mask layer. When you drag the Peg element, the vector element attached to it will move with it as well. You have now created the mask!



5. Drag the **wave.swf** Media element on top of the **Clipping-waveEffect** layer. The clip layers appear below the mask layers, but are indented out from the mask layers.



## Step 3: Export

Well now that you have created your clip mask effect, you are ready to export and show the world the fruits of your labor!

**To export your animation to SWF:**

1. Select **File > Export Movie**. The **Export** dialog box opens.
2. From the **Export Format** menu, select **Flash Movie**.
3. Select **Default** from the **Settings** menu.
4. Type the name of the movie in the **File Name** field and click the **Browse** button if you want to select an alternate location for the final file.
5. Select **Full Movie** from the **Export Type** panel.
6. Select the **Launch Player After Export** option.
7. Click **OK** to begin the exporting process. A progress bar appears to show you the progress of the export. If you want to cancel the export, click **Cancel**.

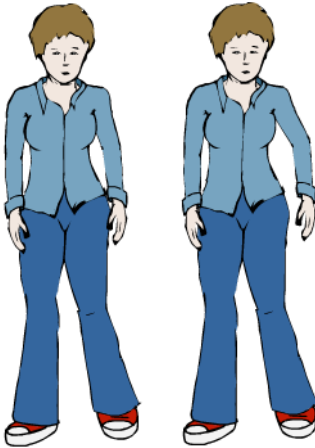
After the animation is rendered, a Playback window will open and play back your animation.

There is an element with some text in it, which we imported from an Adobe® Illustrator® file. To experiment more with the Mask effect, you can replace the existing mask with this element. Remember you will have to change the start time and exposure of this drawing so that it matches the duration of the transition.

# Lesson 7: Retouching Drawings in Sceneplanning

In previous versions of Toon Boom Studio, when you animated drawings with pegs in Sceneplanning views, you would have to switch to a different state, called Drawing Mode, to retouch drawings. However, this was difficult to do in Drawing Mode because you were not able to see how drawings would be positioned relative to each other as a result of Sceneplanning view animations.

Toon Boom Studio makes it possible to retouch drawings more accurately and easily because you can see how drawings in different elements work together when animated.



*Over the duration of the sample scene, Tania bends her arm. The joints at her shoulder and elbow rotate to create the bending motion.*

*In this tutorial, you will use “Drawing in Sceneplanning” to fix gaps that appear at the elbow and shoulder as a result of the bending action.*

There are two animation projects for this lesson:

- DrawingSceneplanning\_Rough
- DrawingSceneplanning\_Final

You will use the DrawingSceneplanning\_Rough animation project to follow the steps in the lesson. When you have questions that you are not sure about, you can refer to DrawingSceneplanning\_Final to see how we did put the final scene together.

**To start the “Drawing in Sceneplanning” lesson:**



1. Download the Quick Start Tutorial files from the Toon Boom Animation website. You can click the Quick Start Tutorial link on the Welcome Screen to open the appropriate Web page.
2. Open the **Lesson7\_DrawingSceneplanning** animation project in the **Lesson7\_DrawingSceneplanning** folder.
3. Save the animation in a location of your choice using **File > Save As**. Saving this animation project to a new location will ensure that you always have the original to return to and use should you want to.

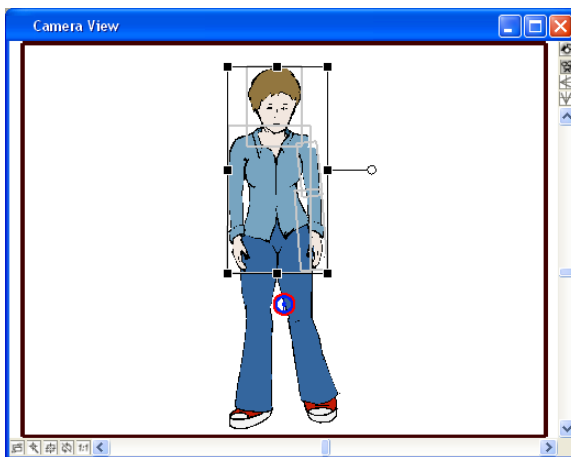
You are now ready to begin working on the sample scene.

## Step 1: Playing Back the Scene

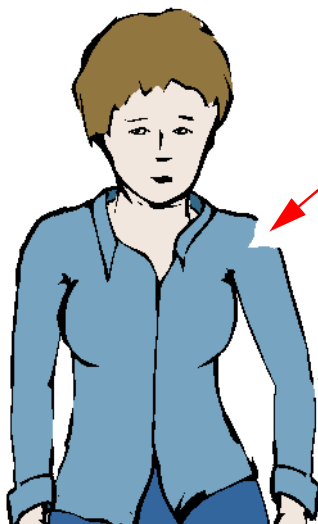
In this first step, you will play back the rough scene to identify problems that arise from the rotation of the joints in the shoulder and elbow.

To play back the scene:

1. Click the **Loop**  button in the toolbar, then click Play .



2. Look closely at the shoulder and elbow as the animation plays back. Press [X] to zoom in close to the image. Press [Spacebar] and drag the window to focus on Tania's left side.



*Notice the gap that appears at the shoulder joint.*

*Notice also the gap that appears in the line art at the elbow.*

*You will fix both of these problems in the following steps.*

3. Click **Stop** ■ to stop the playback.

## Step 2: Retouching the Elbow Joint

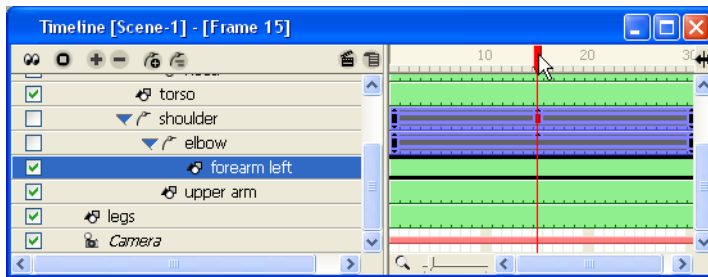
In this step, you will use the Brush tool to retouch the line art on the elbow joint.


You must select a drawing element, the frame that contains the drawing you want to retouch, and a drawing tool. You can draw directly in the Camera View window.

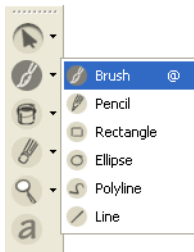
All elements that are shown in the Timeline window will appear in the Camera View window.

**To retouch the elbow joint:**

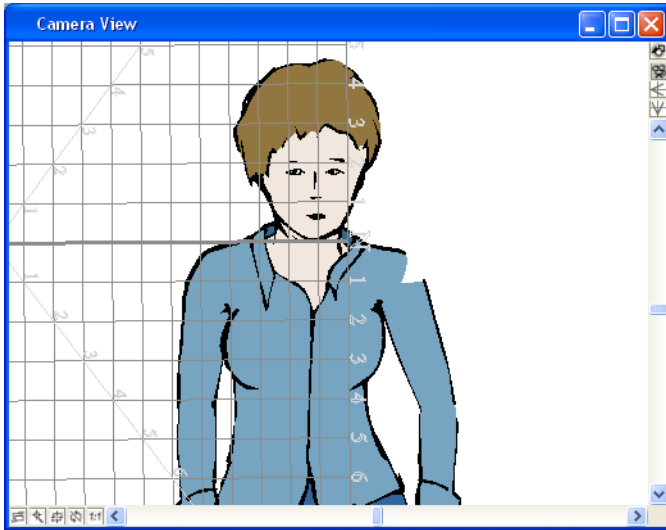
1. In the **Timeline** window, select the “forearm left” element.
2. Drag the red frame slider to the frame 15 in the scene. At frame 15, the gap between the upper arm and forearm is the greatest. Correcting the drawing at this frame should fix the error for the duration of the animation.



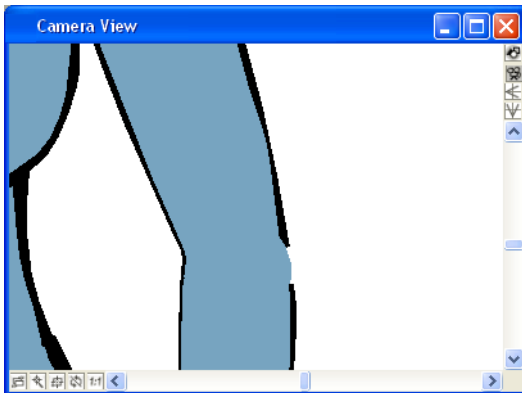
3. From the **Drawing Tools** toolbar, select the **Brush**  tool. To open the **Drawing Tools** toolbar, select **Window > Drawing Tools**.



As soon as you activate one of the drawing tools, you enter in "Edit Drawing" mode.

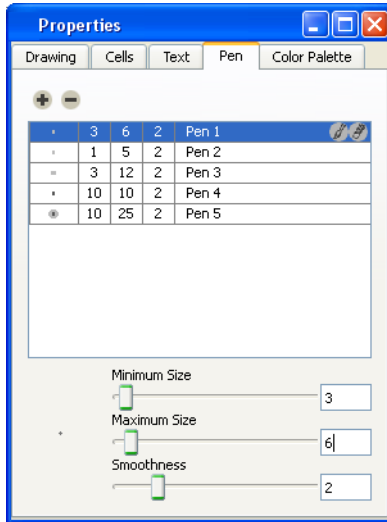


4. Set up your drawing space so that you can work on the elbow.
  - ▶ If the grid is on, you will see it in the **Camera View**. Press [G] to turn it off.
  - ▶ To zoom in, press [X].
  - ▶ To pan the window, press [Spacebar] and drag the window.

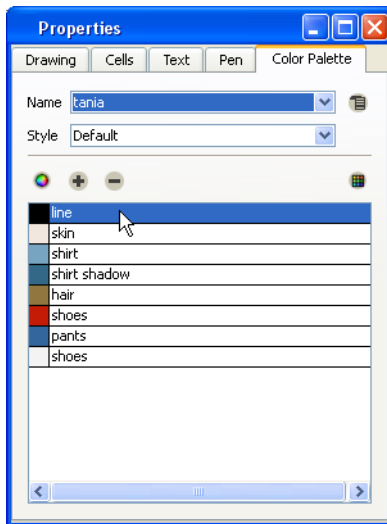




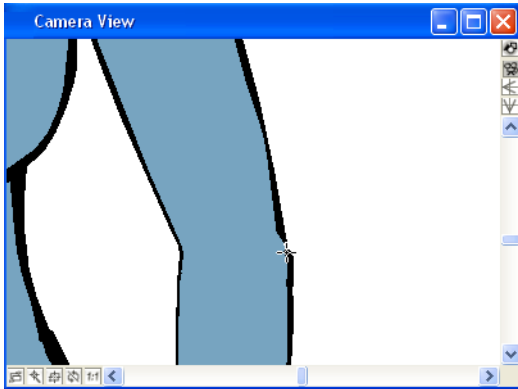
5. In the **Properties** window, click the **Pen** tab, set your **Minimum Size** to 4 and the **Maximum Size** to 6.



6. From the **Colour Palette** tab, select the "line" swatch from the "tania" palette.



7. Use the **Brush** tool to connect the stroke on the forearm to the stroke on the upper arm.



8. Click **Play** ► and watch the elbow as it bends. If there are any problems in your retouching, undo what you did and try again. Click **Stop** ■ to stop the playback before you try to redo your work.

## Step 3: Creating the Shoulder Joint

That was a simple retouch example. The next fix is a little bit more sophisticated.

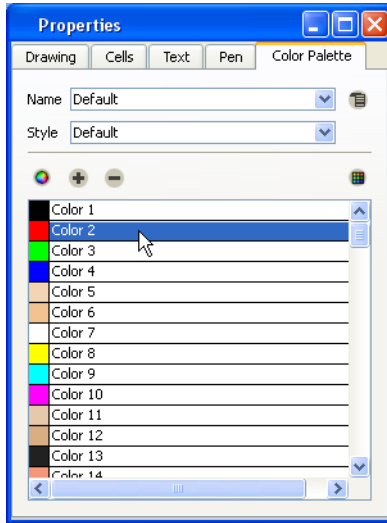
In the shoulder, the gap between the shoulder and the upper arm is large. In this step, you will practice a technique that will help you animate future jointed characters.

To fix the hole between the torso and the upper arm, you will create a perfect circle that will act as the joint on which your upper arm will rotate. The circle will overlap the upper arm and torso so that no gaps will appear while the joint rotates. You can try this technique with other jointed characters you create.

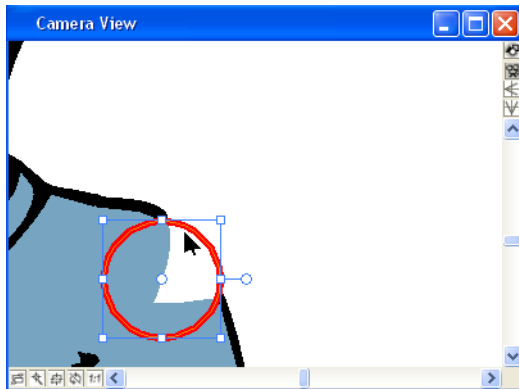
**To create the shoulder joint:**

1. In the **Timeline** window, select the **upper arm** element and move the red frame slider to frame 1.
2. Zoom and pan the **Camera View** window so that you have a close-up view of Tania's left shoulder.
3. From the **Drawing Tools** toolbar, select the **Ellipse** ○ tool.
4. In the **Properties** window, click the **Pen** tab and change the **Maximum Size** value to 6.
5. Click the **Colour Palette** tab, select a red colour swatch from the Default palette.

You will draw the circle with red, and not the colour of Tania's shirt, so that you can easily see the edges of the circle, which will help you position it. After you position the circle, you will paint it with the colour of Tania's shirt and delete the red line art of the circle.

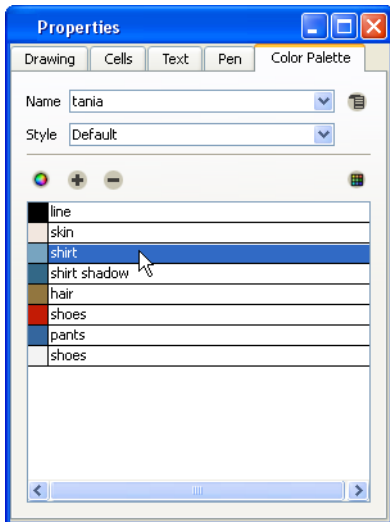


6. In the **Camera View** window, press [Shift] to draw a perfect circle and then use the **Select** tool to position the circle in the gap that is the shoulder.

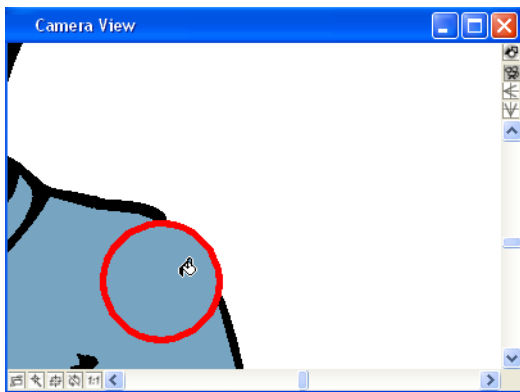


7. Press [Esc] to release the selected circle.

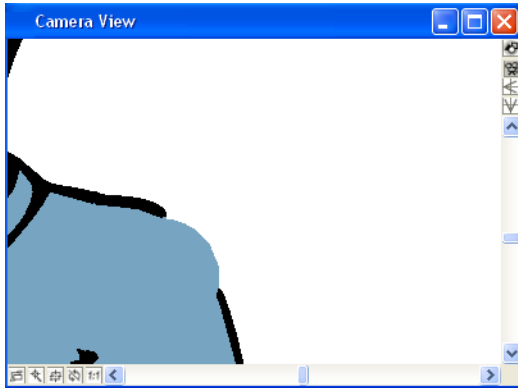
- From the **Properties** window, click the **Colour Palette** tab, select the "shirt" swatch from the "tania" palette.





- From the **Drawing Tools** toolbar, select the **Paint** tool and click inside the red circle to fill it with the "shirt" colour.



10. With the **Select**  tool, select the red line art around the circle and delete it.




11. Click **Play**  and watch the shoulder as it bends. If there are any problems in your joint, undo what you did and try again. Click **Stop**  to stop the playback before you try to redo your work.

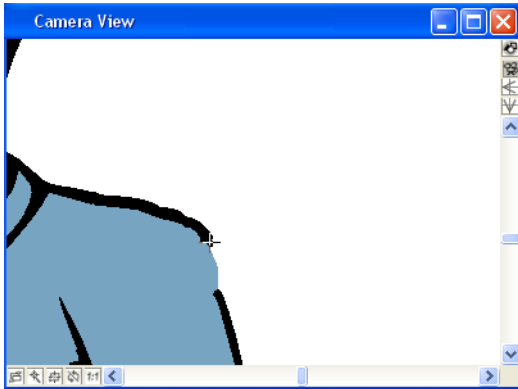
## Step 4: Retouching the Shoulder

After you have created the joint that will fill the gap between the torso and the upper arm, you have to add the line art that will cover the joint.

**To retouch the shoulder:**

1. In the **Timeline** window, select the “upper arm” element.
2. Drag the red frame slider to the first frame in the scene. At frame 1, the gap between the torso and the upper arm is its greatest. Correcting the drawing at this frame should fix the error for the duration of the animation.
3. From the **Drawing Tools** toolbar, select the **Brush**  tool.
4. From the **Properties** window, click the **Colour Palette** tab, select the “line” swatch from the “tania” palette.

5. Use the **Brush** tool to draw the line art over the shoulder.



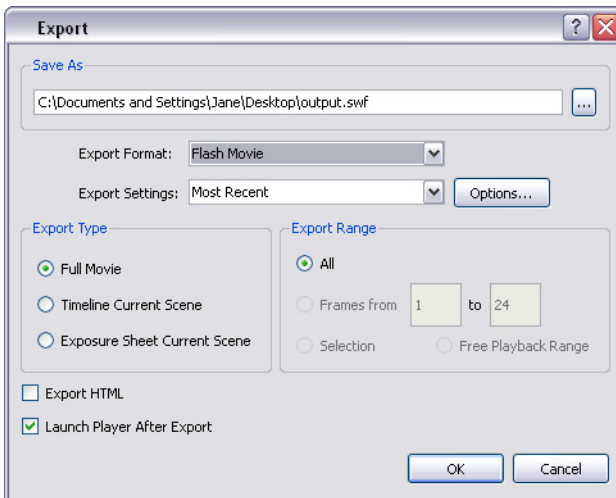
6. Click **Play** ► and watch the shoulder. If there are any problems in your line art, undo what you did and try again. Click **Stop** ■ to stop the playback before you try to redo your work.

## Step 5: Export

Export your scene and show others what you can do with the new “Drawing in Sceneplanning” feature.

To export your animation to SWF:

1. Select **File > Export Movie**. The **Export** dialog box opens.



2. From the **Export Format** menu, select **Flash Movie**.
3. Select **Default** from the **Settings** menu.

4. Type the name of the movie in the **File Name** field and click **Browse** if you want to select an alternate location for the final file.
5. Select **Full Movie** from the **Export Type** panel.
6. Select the **Launch Player After Export** option.
7. Click **OK** to begin the exporting process. A progress bar appears to show you the progress of the export. If you want to cancel the export, click **Cancel**.

After the animation is rendered, a Playback window will open and play back your work.

